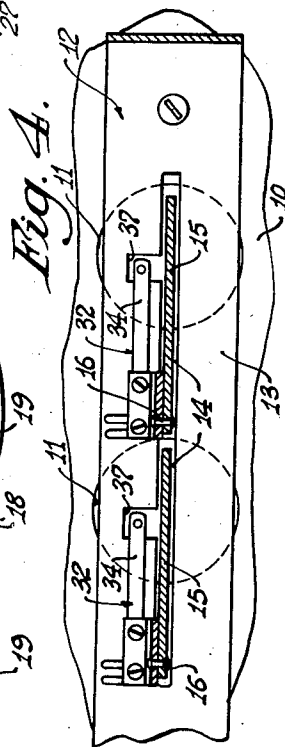
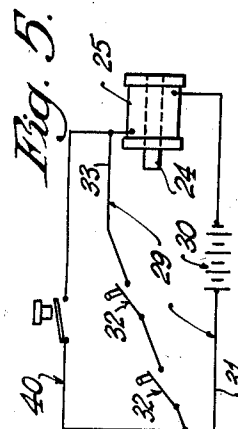
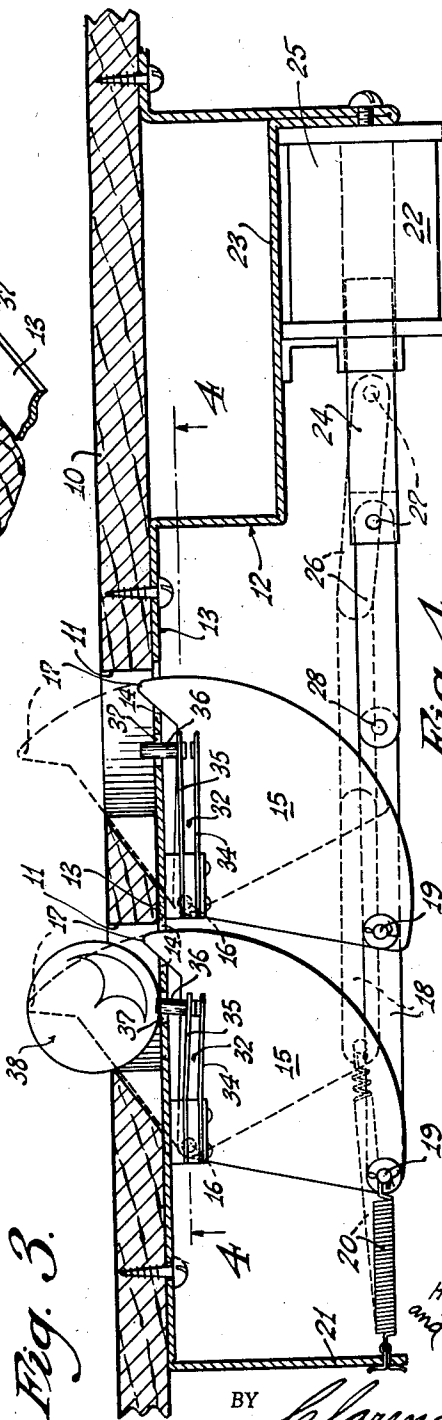
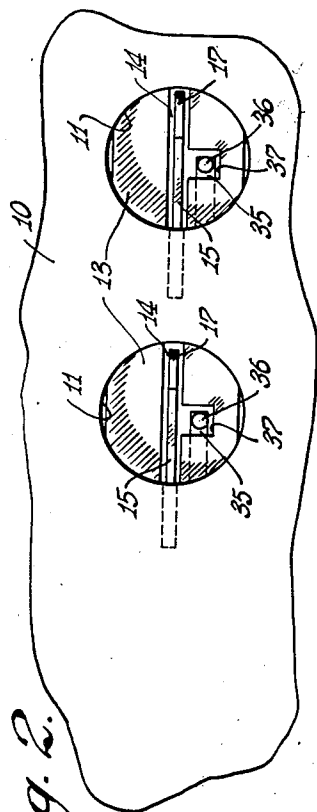
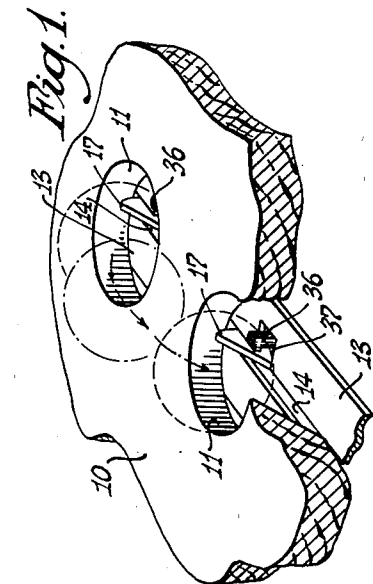


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H. E. WILLIAMS ET AL
ACCESSORY FOR GAME APPARATUS

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ACCESSORY FOR GAME APPARATUS

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4 Claims. (Cl. 273-118)

This invention relates to game apparatus and more particularly to an accessory for game apparatus and has as its principal object the provision of such an accessory which will be simple in construction, economical in manufacture and highly efficient in use.

It is an object of this invention to provide a novel ball objective for game apparatus which ball objective will be adapted to progressively advance playing pieces in accordance with the attainment of such objective.

Another object of this invention is the provision of a unit for advancing balls from one trap to another down an inclined play board.

Still another object of our invention is the provision of a plurality of ball traps in alignment and adapted to coact with balls played into such traps for ejecting the balls therefrom.

Other objects and advantages of the present invention reside in certain novel details and improvements in construction as will become apparent in the following description read in the light of the annexed drawing in which:

Fig. 1 is a fragmentary perspective view of an inclined playing board embodying the present invention;

Fig. 2 is a fragmentary plan view of the same;

Fig. 3 is a longitudinal sectional detail view through the inclined playing board of Figs. 1 and 2;

Fig. 4 is a fragmentary bottom plan view of the under side of the play board as seen substantially along line 4-4 in Fig. 3; and

Fig. 5 is a schematic wiring diagram of an electrical circuit embodied in our invention.

The present invention is best adapted for use in ball rolling games, particularly the type known as bagatelle or pin ball games in which balls are adapted to be projected onto the upper end of an inclined play board for gravitation thereover. Such an inclined play board is indicated at 10 and includes a plurality of ball objectives in the form of apertures 11 cut into the board. In the present instance two of such ball objectives are shown in alignment along the inclined board 10, it being understood that two or more of such ball objectives may be employed in carrying out the purpose of our invention.

In the playing of games of this type, balls are entrapped in the apertures 11 and are normally held therein until liberated by some release or resetting means at the commencement of a new game. The accessory which comprises our invention is adapted for such purpose and in addition thereto is constructed to automatically eject balls entrapped in certain ball apertures for further advancement along the inclined play board during the course of a normal play. This accessory is generally indicated at 12 and includes a strap of metal 13 forming a main car-

riage for our new unit. This strap 13 is adapted to be fastened to the underside of the board 10 in alignment with the aforementioned aligned apertures 11 thus providing a floor for each aperture upon which trapped balls are adapted to rest. An elongated slot 14 is formed in the strap 13 along a line extending from center to center of each aperture 11. An ejector member 15 is pivotally arranged as at 16 adjacent each aperture 11 and such members 15 are in the form of segments having a pusher finger 17 formed at the edge normally extending through the slot 14 and into the aperture 11. The ejector members 15 may vary in number corresponding to the number of apertures 11 and such members 15 in numbers are connected in tandem by means of a connecting rod 18 having pivotal connection with each of said members 15 at their lowermost extremity as at 19. A spring 20 is connected to the rod 18 and also to a fixed anchorage 21 formed as a part of the carriage 13 in such a manner as to maintain all of the ejector members in normal position so that each aperture is adapted to receive a ball as shown in Fig. 3.

A motivating means in the form of an electromagnetic solenoid 22 is arranged on a suspended ledge 23 formed on the carriage 13. This solenoid 22 includes an armature 24 arranged for movement within a coil 25 and in a plane parallel to the alignment of the ejector members 15. A link 26 has pivotal connection as at 27 with the armature 24 and has its opposite end pivotally connected as at 28 with the rod 18. The arrangement is such that the tandem members 15 and rod 18 through link 26 are moved in unison by the armature 24 when the coil 25 is energized in a manner later to be explained. Also the spring 20 effects return of the tandem members 15 and armature 24 when the magnetic influence of the coil 25 ceases.

Means for energizing the coil 25 for magnetically attracting the armature 24 comprises a circuit 29 including a source of electrical energy 30 having its ground connected to the ground pole of the coil 25 and its positive side connected by a conductor 31 with a plurality of switches 32 connected in series so that each of said switches 32 are required to be closed in order to supply current along a conductor member 33 to the positive pole of the coil 25. There are a number of such switches 32 corresponding to the number of ball apertures 11, there being one of such switches 32 associated with each aperture. These switches 32 are a pair of resilient leaf spring contact elements 34 arranged with the uppermost element 35 nearest the underside of the ball apertures 11. Each of the upper elements 35 carries an insulating button 36 which extends through a slot 37 formed in the strip 13 so as to dispose such button 36 up into the ball trap formed by the aperture 11.

As is seen in Fig. 3 when a ball such as the ball 38 is entrapped in an aperture 11, the weight of such ball 38 will bear down upon the button 36 and flex the uppermost contact element into contact with the lowermost element, thus completing circuit through the switch 32 of which they are a part. It is apparent that when a ball is entrapped in each of the apertures 11, all of the switches 32 will be in circuit completing condition, whereupon the coil 25 will become energized.

Energization of the coil 25 attracts the armature 24 to the right (Fig. 3) and consequently draws the link 26 and rod 18 into dotted line position against the action of spring 20. Such action of the rod 18 causes the tandem ejector members 15 to swing in unison upon their pivot mountings 16 and urges the nose portions 17 into engagement with the entrapped balls 38 raising these balls out of the apertures in a direction for movement down the inclined board 10. The ball ejected from the aperture disposed lowest along the inclined board will be free to gravitate down therefrom while balls ejected from apertures above such point will be disposed to gravitate into the next lowest succeeding aperture. As the balls are thus displaced from the apertures, the series circuit through the switches 32 is broken and the coil 25 deenergized, thus releasing the segments 15, rod 18 and armature 24 for return to normal position by action of the spring 20.

An auxiliary circuit 40 is provided to by-pass the normal playing circuit 29 and this auxiliary circuit includes a switch 41 controlled by a hand operated instrument in the form of a push button or the like for evacuating the apertures upon the playboard to condition the game for a new game.

While we have illustrated and described the preferred form of construction for carrying our invention into effect, this is capable of variation and modification without departing from the spirit of the invention. We, therefore, do not wish to be limited to the precise details of constructions set forth, but desire to avail ourselves of such variations and modifications as come within the scope of the appended claims.

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

1. In an accessory for ball rolling game including an inclined play board, a plurality of ball apertures formed in said play board, a tandem ball ejector means for said ball apertures, and including a mounting plate adapted to be mounted on the underside of the inclined playing board and having an elongated slot aligned with said ball apertures, a segment pivotally arranged on said mounting plate beneath each of said ball apertures for swinging movement through said elongated slot, means connecting said segments for tandem movement toward and away from said ball apertures, spring means normally urging said connecting means and said segments in a direction away from said apertures, electromagnetic means including a movable member operatively connected to said connecting means and means for effecting energization of said electromagnetic means to urge said segments and connecting means therefore in an opposite direction against the action of said spring means.

2. In a ball rolling game having an inclined play board over which balls are rollable, a ball objective in the form of a plurality of ball receiving apertures formed in said play board in alignment with each other, an accessory for such game and comprising ball ejecting means for said aper-

tures and adapted to eject balls from said apertures when a certain number of balls have been entrapped in said apertures, said ball ejecting means including a frame adapted to be mounted on the underside of said playboard and having a central slot formation aligned with said ball receiving apertures, a segment pivotally arranged on said frame adjacent each of said ball apertures and disposed to move through the slot formation in said frame, means connecting each of said segments in tandem for movement in unison, electromagnetic means carried by said frame and operatively connected to said connecting means for moving the latter in the aforementioned manner, switch means operatively associated with each of said apertures and adapted to be closed by the weight of a ball thereon said switch means having electrical connection with said electromagnetic means and spring means connected to said frame and said connecting means to urge the latter and said segments into a position to permit entrapment of balls in said ball apertures.

3. In a ball objective for a ball rolling game including a play board over which balls are rollable, a plurality of ball receiving apertures formed in said play board and in alignment with each other, ball ejecting means for said aligned ball receiving apertures, said ball ejecting means including a carriage forming a bottom for said ball apertures and having an elongated slot formed therein parallel to said aligned apertures, ball engaging segments for each of said apertures means pivotally mounting said segments beneath said play board adjacent said apertures, and for movement toward the latter through said elongated slot, a connecting rod extending from segment to segment and having pivotal connection with each of the latter segment motivating means on said carriage and including an armature and a coil adapted to magnetically attract the armature in one direction, link means connecting said armature with said connecting rod, an electrical circuit including a source of energy for said coil and switch means in said circuit for effecting energization of said coil to urge said armature, connecting rod and segments into ball ejecting positions.

4. In a ball objective for a ball rolling game including a play board over which balls are rollable, a plurality of ball receiving apertures formed in said play board and in alignment with each other, ball ejecting means for said aligned ball receiving apertures, said ball ejecting means including a carriage forming a bottom for said ball apertures and having an elongated slot formed therein parallel to said aligned apertures, ball engaging segments for each of said apertures, means pivotally mounting said segments beneath said play board adjacent said apertures and for movement toward the latter through said elongated slot, a connecting rod extending from segment to segment and having pivotal connection with each of the latter, segment motivating means on said carriage and including an armature and a coil adapted to magnetically attract the armature in one direction, link means connecting said armature with said connecting rod, an electrical circuit including a source of energy and a control means for effecting energization of said coil, and spring means having one end anchored to said carriage and an opposite end attached to said connecting rod for maintaining the latter and said segments in a normal condition.

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