

Sept. 7, 1937.

S. H. MELNICK ET AL

2,092,286

SWITCH

Filed Nov. 20, 1935

Fig. 1.

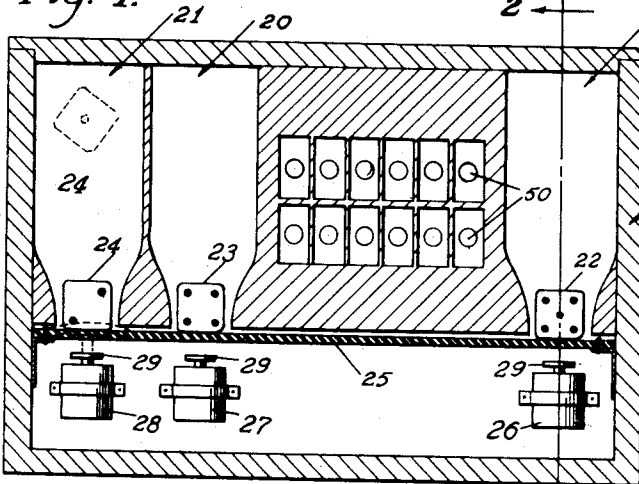


Fig. 2.

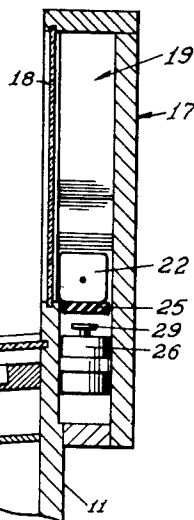


Fig. 3.

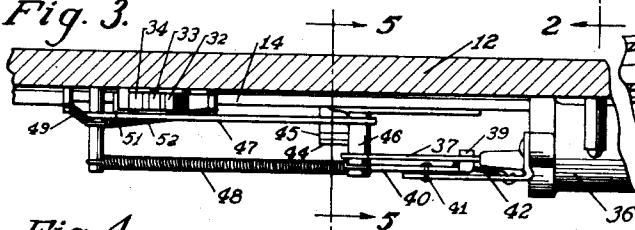


Fig. 4.

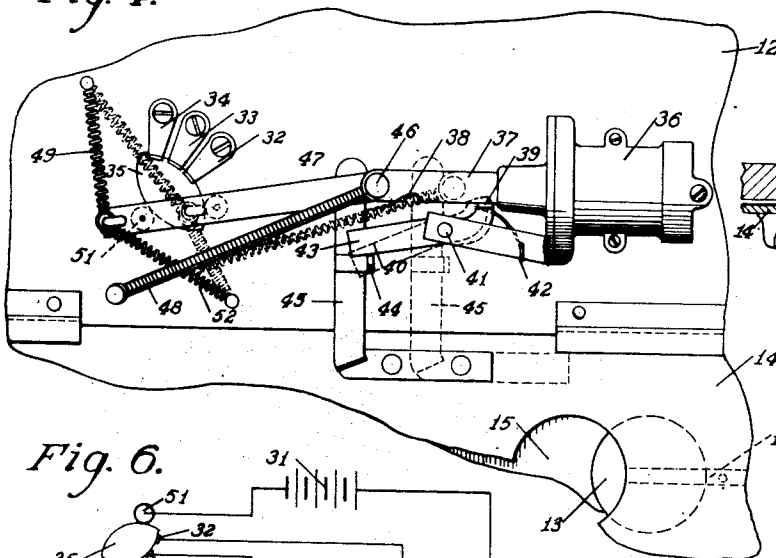


Fig. 5.

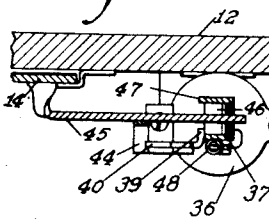
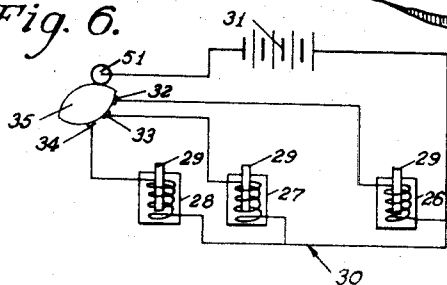


Fig. 6.



INVENTORS
Samuel H. Melnick
and Paul B. Chapin
 BY *Thurley and Cannon*
 THEIR ATTORNEYS

UNITED STATES PATENT OFFICE

2,092,286

SWITCH

Samuel H. Melnick and Paul B. Chapin, Chicago, Ill., assignors to A. B. T. Manufacturing Company, Chicago, Ill., a corporation of Illinois

Application November 20, 1935, Serial No. 50,641

4 Claims. (Cl. 200—34)

This invention relates to game apparatus, and switch means therefor.

It is an object of this invention to provide an improved switch which is relatively simple and inexpensive in construction and efficient in use.

Another object of the present invention is to provide an amusement apparatus embodying one or more pockets or compartments in which are arranged one or more movable articles such, for example, as dice, and to provide a novel means for causing the dice to be projected upwardly in their pockets or compartments so to afford amusement to the player and to change the number combinations on the upper faces of the dice after the same have been projected upwardly and come to rest.

A further object is the provision of novel switch mechanism for controlling the operation of the projecting means aforesaid.

Another object of the invention is to provide a novel device for projecting the score-indicating members or dice, upwardly in their pockets or compartments by action of the coin slide or actuating member of a so-called pin and marble game, so that the player may, at the start of the playing operation, have an objective score for which to play, as indicated by the numerals on the upper faces of the dice after the projecting operation.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed, and will be best understood by reference to the accompanying drawing showing the preferred form of construction, and in which:

Fig. 1 is a sectional view of a game apparatus embodying a preferred form of the present invention;

Fig. 2 is a sectional view on line 2—2 in Fig. 1;

Fig. 3 is a view, partly in section, and partly in elevation, showing certain parts of the new apparatus;

Fig. 4 is a bottom plan view of the parts of the new apparatus shown in Fig. 3;

Fig. 5 is a sectional view, on line 5—5 in Fig. 3; and

Fig. 6 is a diagrammatic view of an electrical circuit embodied in the invention.

The new switch is illustrated in conjunction with a game apparatus which is shown in the drawing, and is therein generally indicated at 10. The game comprises a cabinet 11 which includes an inclined playing board 12 having ball-receiving pockets 13 formed therein. Slid-

ably mounted in the cabinet 11, below the inclined playing board 12, is a ball-retaining member 14 in which are provided ball exit openings 15 and these openings 15 are adapted to be registered with the pockets 13 by movement of the ball-retaining member 14. Mounted on the ball-retaining member 14 are switches 16 which are normally disposed under the pockets 13.

Provided in the cabinet 11 at the head or upper end of the inclined playing board 12 is an upright housing which is generally indicated at 17 and which has a transparent front wall 18. Formed in this housing 17 are pockets or compartments 19, 20, and 21 and arranged in each of these compartments 19, 20 and 21 are one or more movable score-indicating members, such, for example, as dice 22, 23 and 24 respectively.

The bottom wall of the several pockets or compartments 19, 20, and 21 is formed by a flexible diaphragm 25 which may be made of any material which is suitable for the purpose such, for example, as rubber or the like.

Mounted in the housing 17, below the flexible wall 25 is a group of electromagnets or solenoids 26, 27 and 28 which are arranged, respectively, below the pockets or compartments 19, 20 and 21, each of these electromagnets or solenoids 26, 27 and 28 having a movable element 29, and these movable elements 29 being engageable with the flexible wall 25, for a reason to be explained presently.

The solenoids 26, 27 and 28 are arranged in an electrical circuit 30 (Fig. 6), which includes a suitable source of current 31, which may be, for example, a battery of dry cells or the like arranged in the cabinet 11. Also embodied in the circuit 30 is a group of relatively stationary contacts 32, 33 and 34 which are mounted on the bottom side of the inclined playing board 12 and engageable successively with these contacts 32, 33 and 34 is a contact roller 51 which is carried by a pivotal bar 47.

Mounted in the cabinet 11, below the inclined playing board 12, is a dash pot 36 which includes a movable element or slidable piston rod 37 and provided in one edge of this piston rod 37 is a notch or recess 38. Engageable in this recess 38 is the end portion 39 of a latch member 40 which is pivotally mounted, between its ends, as at 41, (Fig. 4), below the inclined playing board 12, the end portion 39 of the latch member 40 being urged into latching engagement with the notch 38 by a spring 42.

Engageable with an end portion 43 of the latch member 40 is a projecting portion 44 of

a member 45 which is attached to, and is carried by, the slidable ball-retaining member 14.

The bar 47 is pivotally connected at one end, by a pin 46, to the piston rod 37 of the dash pot 36 and mounted on the inclined playing board 12, on the bottom side thereof, is a stationary elliptical cam 35 (Fig. 4). Attached to the pin 46 and normally urging the piston rod 37 into extended position (right to left, Fig. 4) is a coil spring 48 and attached to the bar 47, at one end thereof, is a coil spring 49. Likewise attached to the bar 47, on the opposite side of the same from the spring 49, is a coil spring 52.

Arranged in the upright housing 17 is a group of score-indicating lamps 50 which are adapted to be illuminated by the switches 16.

Operation

The ball-retaining member 14 is adapted to be moved into ball-releasing position (left to right, Figs. 2 and 4) by the action of the coin slide or actuating member which is movably mounted in a wall of the cabinet 11, (not shown) in a manner which is well understood in the art.

When the slidable ball-retaining member 14 is moved into ball-releasing position (left to right, Figs. 2 and 4), the arm 45 carried thereby will engage the pin 46 and thereby move the piston rod 37 of the dash pot 36 (left to right, Fig. 4), against the action of its resetting spring 48. During this operation the spring 42 acts upon the latch member 40 to pivot the end portion 39 thereof into latching engagement with the notched portion or recess 38 in the piston rod 37, thereby latching the piston rod 37 in inwardly extended position, against the action of its resetting spring 48.

This movement of the piston rod 37 also moves the bar 47 (left to right, Fig. 4) and during this operation the contact roller 51, which is carried by the bar 47, rides over the peripheral edge of the stationary elliptical cam 35 (counterclockwise, Fig. 4), thereby tensioning the spring 49.

Accordingly, when the coin slide or actuating member (not shown), and the slidable ball-retaining member 14, are released for return to their initial positions (right to left, Fig. 4), in a manner which is well understood in the art, the depending portion 44 of the member 45 will engage the end portion 43 of the latch member 40 and thereby pivot the latter, at 41 (clockwise, Fig. 4), thus moving the end portion 39 of the latter member 40 out of latching engagement with the notched portion or recess 38 in the piston rod 37 of the dash pot 36, whereupon the tensioned resetting spring 48 will move the piston rod 37 and the bar 47 attached thereto back into their initial positions (right to left, Fig. 4). During this movement of the bar 47 (right to left, Fig. 4) the same will be pivoted, at 46, (clockwise, Fig. 4) by the tensioned spring 49, thereby causing the contact roller 51 carried thereby to ride over the peripheral edge of the elliptical cam 35, on the upper peripheral edge thereof, as seen in Fig. 4. During this operation the contact roller 51 will successively engage the stationary contacts 32, 33 and 34 and will thus successively close the circuit 30 (Fig. 6) to the solenoids 26, 27 and 28.

When the circuit 30 to the solenoid 26 is thus closed, by the engagement of the contact roller 51 with the stationary contact 32, the movable element 29 of the solenoid 26 will be projected upwardly into engagement with that portion of the flexible diaphragm 25 which is arranged be-

low the pocket 19 (Fig. 1), thereby projecting the dice 22 upwardly in the pocket 19. Similarly, when the circuit 30 is closed to the solenoid 27, by the engagement of the contact roller 51 with the stationary contact 33, the movable element 29 of the solenoid 27 will be raised into engagement with that portion of the flexible diaphragm 25 which is arranged below the pocket 20, thereby projecting the dice 23 upwardly in the pocket 20.

Similarly, when the circuit 30 to the solenoid 28 is closed, by the engagement of the contact roller 51 with the stationary contact 34, the movable element 29 of the solenoid 28 will be raised into engagement with that portion of the flexible diaphragm 25 which is arranged below the pocket 21, and the latter will be flexed to project the dice 24 upwardly in the pocket 21.

When the dice are thus projected upwardly in their pockets or compartments 19, 20 and 21 they not only afford amusement to the player but also indicate, by the markings on the upper faces of the dice 22 when the same come to rest, an objective score for which the player may play by playing balls into the pockets 13; it being noted that when balls are played into the pockets 13 they will close the switches 16 to illuminate the score-indicating lamp 50.

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 construction 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. A switch including an elliptically-shaped guide block of insulating material, a switch arm mounted for reciprocable movement relative to said block, a contact roller on said arm, spring means normally urging said arm and the contact thereof in a position at one side of said block, and means cooperable with said last-mentioned spring means for effecting guided movement of said contact around and against said block when said arm is reciprocated, said last-mentioned means including a pair of divergent spring members attached to said arm adjacent said contact and anchored at their respective extremities opposite the point of attachment to said arm, said block having fixed contact means disposed along one side thereof for contacting engagement by said contact on the arm when the latter is reciprocated, the said several spring members being cooperable during such reciprocation to effect the movement of the contact on said arm in a circuit around said elliptical block for operative engagement with said fixed contact means.

2. A switch including a fixed elliptically-shaped guide block, a dashpot including a reciprocable piston rod, a switch arm pivotally attached at one of its extremities to said piston rod and having an extending contact adjacent its opposite extremity, spring means attached to said switch arm at a point adjacent its pivotal connection with said piston rod and adapted normally to position said extending contact at one side of said block, fixed contact means disposed on a side of said block opposite to the aforesaid normal position of the extending contact, together with spring means attached to said switch arm at a point near said extending con-

tact and operable when said arm is reciprocated to effect the guided movement of said extending contact around said block in transient engagement with said fixed contact means.

5 3. A switch including a fixed elliptically-shaped guide block, a dashpot including a reciprocable piston rod, a switch arm pivotally attached at one of its extremities to said piston rod and having an extending contact adjacent its
10 opposite extremity, spring means attached to said switch arm at a point adjacent its pivotal connection with said piston rod and adapted normally to position said extending contact at one side of said block, fixed contact means disposed
15 on a side of said block opposite to the aforesaid normal position of the extending contact, and spring means attached to said switch arm at a point near said extending contact and operable when said arm is reciprocated to effect the
20 guided movement of said extending contact around said block in transient engagement with said fixed contact means, together with means for latching said piston rod in retracted position away from the normal position aforesaid.

25 4. A switch including a support, an elliptical guide block attached to said support, a first reciprocable arm and a switch arm pivotally attached thereto and having a laterally extend-

ing contact roller, spring means attached adjacent the juncture of said switch arm and said reciprocable arm and anchored on said support for normally urging said switch arm and the contact thereof in a position at one side of said block, a plurality of fixed contacts disposed along one side of said block for engagement by said roller contact, a pair of divergently extending springs each anchored to said support and attached to said switch arm at a point near said roller contact, the same being operable to effect the guided movement of said roller contact around said block and into successive engagement with said fixed contacts when said arm is reciprocated, a reciprocable actuating member operable when moved in one direction to retract said first-mentioned reciprocable arm against the tension of said first-mentioned spring means for automatically latching said first-mentioned reciprocable arm in retracted position as aforesaid, said actuating member being operable when moved in an opposite direction to release said latching means to permit said first-mentioned reciprocable member and said switch arm to return to normal position.

SAMUEL H. MELNICK.
PAUL B. CHAPIN.