ABSTRACT OF THE DISCLOSURE

This invention is a switch assembly for motorized, battery-operated games in which a battery is an integral part of the switch assembly and the battery is easily replaceable.

This invention relates to an electric switch assembly for motorized games or the like.

Games which have electrical apparatus incorporated therein such as motors and lights must necessarily have switches for controlling the electrical apparatus. The commercial market in which games are sold is very competitive and it is thus that manufacturing costs are of considerable importance. The switch assembly of the present invention has a simplicity which facilitates the economical manufacture thereof and yet is of a rugged and sturdy enough construction to withstand the rigors it is subjected to at the hands of children.

The commercial market also requires battery operated games to have the battery thereof easy enough to replace so that it can be done by children. The switch assembly of the present invention has a battery as an integral part thereof and its ease of replacement is a feature of the invention.

It is accordingly a main object of the invention to provide a new and improved electrical switch for battery operated games. It is a further object to provide such a switch which is both rugged in construction and economical to manufacture.

Another object is to provide a new and improved switch assembly for games or the like in which a battery is an integral part thereof. It is also an object that the battery in the switch assembly be easily replaceable.

Other objects and advantages of the invention will become apparent from the following specification, drawings and appended claims.

In the drawings:

FIG. 1 shows a perspective view of a game board having an electric motor operated spinner and a switch assembly which controls the spinner motor;

FIG. 2 shows fragmentary elevational sectional views through the spinner and motor assembly and through the switch assembly which embodies the invention; and

FIG. 3 is a plan sectional view taken through line 3--3 of FIG. 2.

In the drawing, FIG. 1 shows a game board having a rotatable spinner 1 and a depressible switch button 2. As will be explained, the spinner is driven by an electric motor and the switch button is part of a switch assembly which embodies the invention and which controls the spinner motor. The game board is of a common type in which a ring of numbers is associated with the spinner and a route or path is provided on the face of the board which is traversed by player tabs in accordance with numbers indicated by chance of the spinner.

The game board has the form of a rectangularly shaped box made of cardboard of the like and, as shown in FIG. 2, has upper and lower vertically spaced panels 3 and 4. An electric motor 5 having a drive shaft 6 is disposed under the upper panel 3 with the shaft extending upwardly through a hole 7 in the panel 3. Spinner 1 has a hub portion 8 and is press fitted onto the shaft 6. A cardboard bracket 9 having a U-shaped section is provided for mounting the motor, the bracket having flanges 10 which are cemented to the underside of the panel 3. Conductor wires 11 and 12 are attached to the motor with wire 11 being of a length which is somewhat in excess of the distance between the motor and the switch assembly.

The switch assembly comprises four main parts which are a battery 20, two battery receptacles 2 and 21, and a coil spring 22. The push button 2 which appears in FIG. 1 is the same part as receptacle 2 which appears in FIG. 2. Battery 20 is a cylindrically shaped dry cell having electrodes 23 and 24 at opposite ends thereof which have opposite polarities. Receptacles 2 and 21 are made of an electrically insulating plastic material.

Receptacle 21 is cup-shaped with a disk-shaped base of larger diameter and is cemented to the lower panel 4. The diameter of the bore of receptacle 21 is slightly larger than the diameter of battery 20 to facilitate the guiding of upward and downward movements of the battery without impeding such movements. The wall of receptacle 21 has a narrow, vertically extending slit 25 through which wire 12 extends with the terminal portion of the wire resting on the floor of the receptacle. A disk 26 of a metallic substance and having a diameter slightly in excess of the internal diameter of the receptacle 21 is press fitted into the receptacle so as to press the end portion of the wire 12 between the disk and the floor of the receptacle. This provides a good electrical connection between the wire and the disk and holds the terminal portion of the wire firmly in place.

The portion of the switch assembly which comprises the receptacle 2, the battery 20, and the spring 22 is assembled as a unit, along with the wire 11, outside of the game board. This unit is insertable to the illustrated position through the hole 27 in the upper panel 3, the hole 27 being directly above the receptacle 21.

Receptacle 2 is cup shaped with a disk shaped base of larger diameter. The internal diameter or bore 28 of receptacle 2 is somewhat in excess of the diameter of battery 20. Three circumferentially arranged, longitudinally extending ribs 29 protrude from the bore surface and the ribs present an effective diameter about equal to the diameter of the battery 20 so that, upon being inserted, the battery is held snugly in contact with the ribs 29. The end of the battery having the female electrode 24 is preferably inserted into the receptacle 2. The battery and the end portion of the wire 11 are inserted simultaneously into the receptacle 2 with the terminal portion of the wire in contact with the electrode 24. When the battery is fully inserted into the receptacle 2 the terminal portion of the wire 11 is snugly held in electrical contact with the female electrode 24 between this electrode and the base of the receptacle. The portion of the wire 11 which extends out of the receptacle 2 extends through the space provided by the ribs 29 between the battery and the receptacle bore 28.

Coil spring 22 has an internal diameter which is substantially equal to the diameter of battery 20. The battery is inserted into the spring so as to be surrounded by the coils thereof. The spring 22 may fit loosely on the battery but preferably it should engage the battery with sufficient tightness to be self-retaining. The diameter of the spring wire should be sufficient so that the upper and lower ends of the spring will respectively engage the adjacent ends of receptacles 2 and 21 in abutting engagement when the switch parts are in their assembled positions as illustrated in FIGS. 2 and 3.

After the receptacle 2, battery 20, wire 11 and spring 22 are assembled as a unit outside of the game board,
the unit is inserted through hole 27 in panel 3 and the lower end of the battery is inserted into the receptacle 21. The length of coil spring 22 is selected so that the battery will be suspended with the electrode 23 in spaced relation to the metal disk 26. The switch assembly is actuated by pushing downwardly on the receptacle or push button 2 to move the battery electrode 23 into contact with the metal disk to complete the circuit and actuate the motor 5 to cause rotation of the spinner 1.

It will be understood that the spacing between panels 3 and 4 is arranged relative to the length of the battery so that the top of the receptacle or push button 2 is sufficiently spaced from the panel 3 to allow for the depressing of the push button. It will also be understood that the battery is conveniently replaced by simply withdrawing the unit which comprises the receptacle 2, the battery, the wire 11 and the spring 22 through the hole 27, dismantling the parts of this unit, and reassembling the unit with a fresh battery in the same manner that the unit was originally assembled as described above.

While one embodiment of the invention is described here, it will be understood that it is capable of modification, and that such modification, including a reversal of parts, may be made without departure from the spirit and scope of the invention as defined in the claims.

Claims

1. A switch assembly for a game or the like having vertically spaced upper and lower panels and a motor or the like to be controlled by the switch assembly, said switch assembly comprising: a cylindrically shaped dry cell battery having electrodes at opposite ends thereof of opposite polarity, a first cup shaped receptacle attached to said lower panel and having an effective internal diameter slightly larger than said battery diameter to facilitate relative sliding movement therebetween, a first conductor wire having the terminal end thereof on the floor of said receptacle, means maintaining said terminal end of said wire in a fixed position, a second cup shaped receptacle receiving one end of said battery and having an effective internal diameter substantially equal to the diameter of said battery to facilitate a snug fit therebetween, a second conductor wire, said second receptacle having passage means facilitating said second wire extending into said receptacle with the terminal end thereof engaging and being held in a fixed position between said battery and the ceiling of said second receptacle, spring means attached to said battery with the upper edge of said spring means being in abutting engagement with the bottom of said second receptacle, said spring means having a free length such that the lower edge abuts the top of said first receptacle and holds said battery in spaced relation to said terminal end portion of said first wire.

2. A switch assembly according to claim 1 wherein said battery electrodes are male and female with said first receptacle adapted to cooperate with the male electrode and said second receptacle adapted to cooperate with the female electrode.

3. A switch assembly according to claim 1 wherein said first receptacle has a cylindrically shaped wall having an opening through which said first conductor wire is extendable.

4. A switch assembly according to claim 3 wherein said opening is a vertically extending slit.

5. A switch assembly according to claim 3 wherein a metallic disk press fitted into said first receptacle is provided as the means for maintaining the terminal end of said first wire in a fixed position.

6. A switch assembly according to claim 1 wherein said second receptacle has internally protruding ribs which engage said battery and which are circumferentially arranged and longitudinally extending.

7. A switch assembly according to claim 6 wherein said passage means for said second wire is formed at least partly in a space defined by said ribs and said battery.

8. A switch assembly according to claim 1 wherein said spring means comprise a coil spring in surrounding relation to said battery.

9. A switch assembly according to claim 5 wherein said battery is movable into and out of electrical contact with said metal disk upon said second receptacle being actuated by an operator.

10. A switch assembly according to claim 1 wherein said second receptacle extends through an opening in said upper panel so that said second wire is not visible from the exterior of said game, said wires being of sufficient length so that the unit which comprises said second receptacle and said battery can be expeditiously withdrawn to facilitate the replacement of said battery.

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