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ELECTRICAL SWITCHING DEVICE

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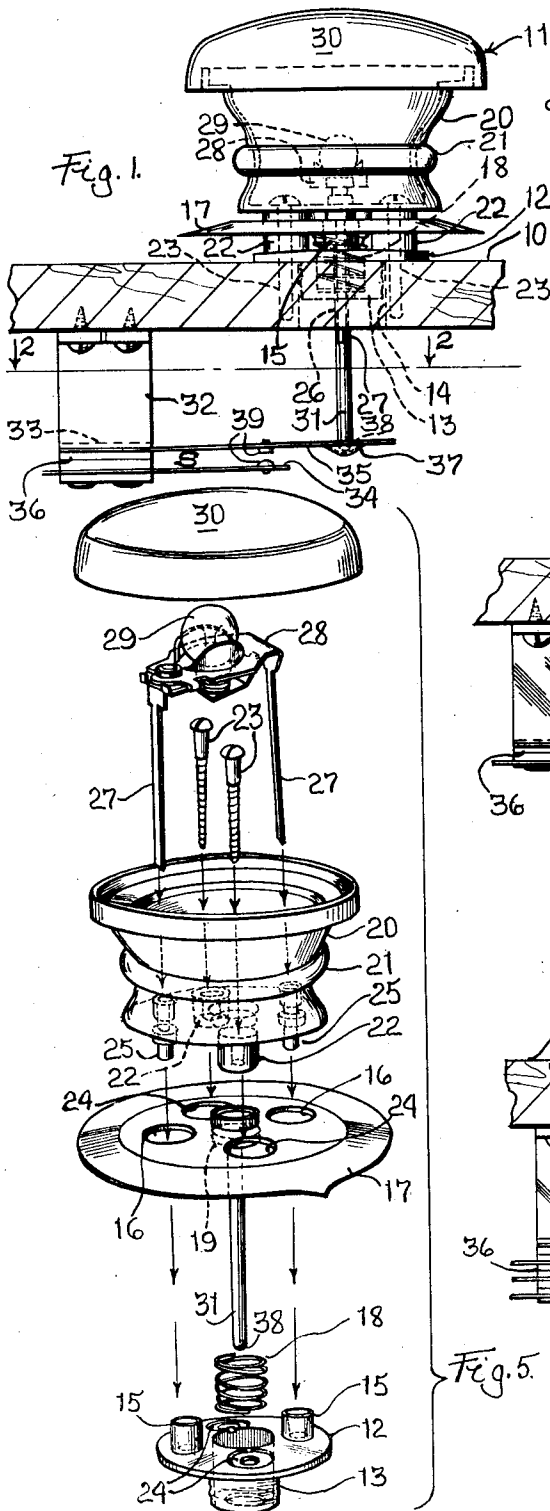
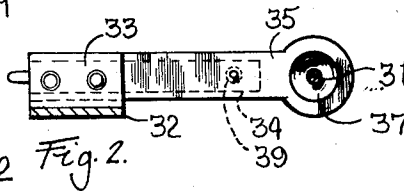
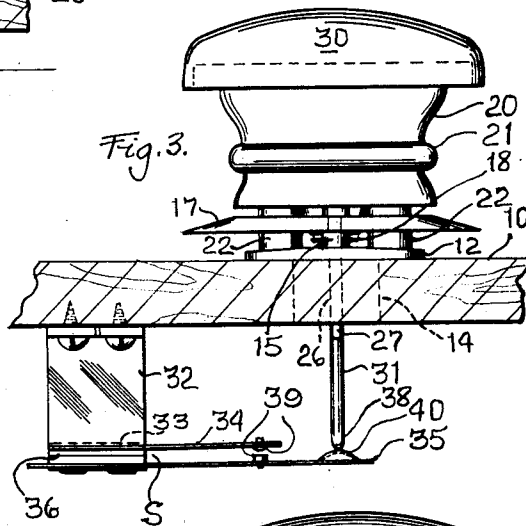
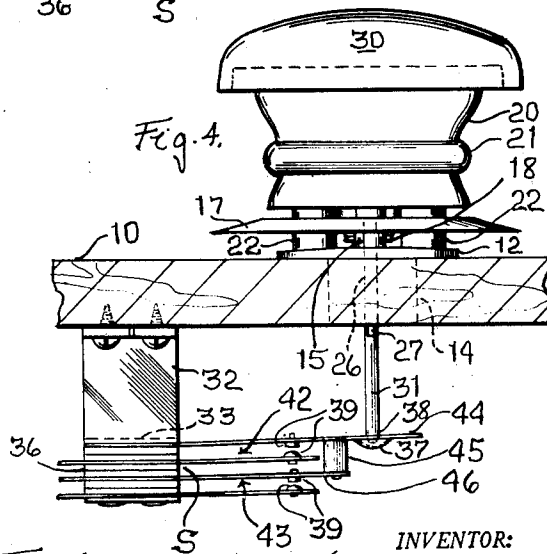


Fig. 5.

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ELECTRICAL SWITCHING DEVICE

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This invention relates broadly to electrical switching devices and more specifically to a bumper switch for use in amusement apparatus such as bagatelle or other ball rolling games.

Prior to the advent of my invention, the contacting switch elements would cause an arc to the extent that in a short time one or both of the contacting switch elements would be rendered inoperative.

It is one of the objects of this invention to provide a device of this character which will eliminate the above objections and overcome the difficulties heretofore expressed.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings showing the preferred form of construction, and in which:

Fig. 1 is a sectional detail view of a game board showing my improved switching device associated therewith;

Fig. 2 is a sectional detail view taken substantially on line 2—2 of Fig. 1;

Fig. 3 is a sectional detail view similar to Fig. 1 but showing a modified form of construction;

Fig. 4 is a sectional detail view similar to Fig. 3 but showing a further modified form of construction; and

Fig. 5 is a perspective view of certain elements of my improved switching device showing the elements in an exploded relation with respect to each other.

The several objects of my novel switching devices are accomplished by the preferred form of construction shown in the accompanying drawings. In this connection a game board is indicated at 10. A ball (not shown) is adapted to be moved over this board into contact with a bumper or target indicated at 11.

This target 11 comprises a base plate 12 having a center hub 13 which is adapted to seat in an opening 14 formed in the board when the base plate 12 is mounted thereon. This base plate 12 has spaced sleeves 15 which are adapted to pass through openings 16 formed in a floating disc 17.

Interposed between the disc 17 and the plate 12 is a spring 18, the lower end of which is mounted in the hub 13 and the upper end embraces a boss 19 formed on the disc 17.

A light bowl is indicated at 20 and embracing this bowl 20 is a rebound resilient ring 21. This bowl has extending from the bottom wall thereof projections 22, and passing through these projec-

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tions 22 are wood screws 23 by which the bowl 20 is attached to the board 10, the disc 17 and plate 12 having registering openings 24 formed therein for the passage of these screws 23. The bowl 20 has projecting from the bottom wall thereof sleeves 25, which fit into the sleeves 15, and these sleeves 15 register with openings 26 for the passage, through the board 10 and the sleeves 15, of conductor strips 27 to which circuit wires are attached. These conductor strips 27 provide a bridge 28 into which a lamp socket 29 is mounted for circuit connection with these strips 27.

The bowl 20 is provided with a cover 30 which is frictionally connected to the bowl 20 in any suitable manner.

The target thus far described is a conventional target now commonly employed in bagatelle or ball rolling games. My improvement consists of associating with the tiltable disc 17 (which disc is tilted against the action of the spring 18 by engagement with a rolling ball) a substantially rigid actuating arm 31 secured to the disc 17 in any approved manner and extending downwardly therefrom through the hub 13. This actuating member is in the form of a rod and is tiltable with the disc 17. In the form shown in Fig. 1 there is suspended from the board 10 a bracket 32. This bracket 32 has a horizontal flange 33 to which a switch unit S is connected. This switch unit comprises switch leaves 34 and 35 insulated from each other by non-conductive blocks 36. The switch leaf 35 has a substantially dish-shaped depression 37 formed therein, and engaging in and contacting therewith is the end portion 38 of the actuating rod 31. These switch leaves 34 and 35 have confronting contact heads 39 which are adapted to engage each other when the leaf 35 is flexed by the tilting action of the rod 31 in its movement against the dish-shaped depression 37.

The form shown in Fig. 3 is substantially the same as that shown in Fig. 1 except that the switch leaf 35 is reversed so as to extend the depression upwardly to form a hill 40 engaging the end 38 of the rod 31.

The form shown in Fig. 4 is substantially the same as that shown in Fig. 1 with the exception that the switch unit S includes 2 pairs 42 and 43 of switch leaves with the leaf 44 of one pair 42 connected by non-conductive blocks 45 to the leaf 46 of the other pair 43.

Upon tilting of the disc 17 the rod 31 acts directly upon the switch leaf engaging thereby to flex the same so as to bring its contact head

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in contact with the conductor head of the other switch leaf of the switch unit. This direct and positive contact between the switch leaf and the rod eliminates arcing. As the arcing is eliminated it is manifest that carbonization or burning of the switch leaf is eliminated. This prolongs the life of the switch unit and accomplishes a positive contact without arcing.

In the various forms of the invention shown in the drawings, the actuating rod 31 is supported for pendulous movement in any direction with respect to the dish-shaped camming surface or depression 37. This actuating member is at all times in constant engagement with such camming surface to effect closing of the contacts of the switch unit irrespective of the direction of pendulous movement of the same.

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

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

1. For a combination comprising a supporting bracket, a switch unit carried by the bracket including a pair of switch leaves having normally spaced apart confronting contact heads, one of said leaves providing a camming surface, an actuating member having an end portion in con-

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stant engagement with the camming surface and extending substantially at right angles with respect thereto for pendulous movement in any direction with respect to the camming surface to effect engagement between said contact heads irrespective of direction of pendulous movement of said actuating member with respect to said camming surface and means for supporting said actuating member for said pendulous movements.

2. For a combination comprising a supporting bracket, a switch unit carried by the bracket, including a pair of switch leaves having normally spaced apart confronting contact heads, one of said leaves providing a substantially dish-shaped camming surface, an actuating member having an end portion in constant engagement with the camming surface and having pendulous movement in any direction with respect to the camming surface to effect engagement between said contact heads irrespective of direction of pendulous movement of said actuating member with respect to said camming surface, and means for supporting said actuating member for said pendulous movements.

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