

March 1, 1938.

N. A. NELSON

2,109,678

CONTACT SWITCH FOR BALL ROLLING GAMES

Filed Jan. 12, 1937

Fig. 1.

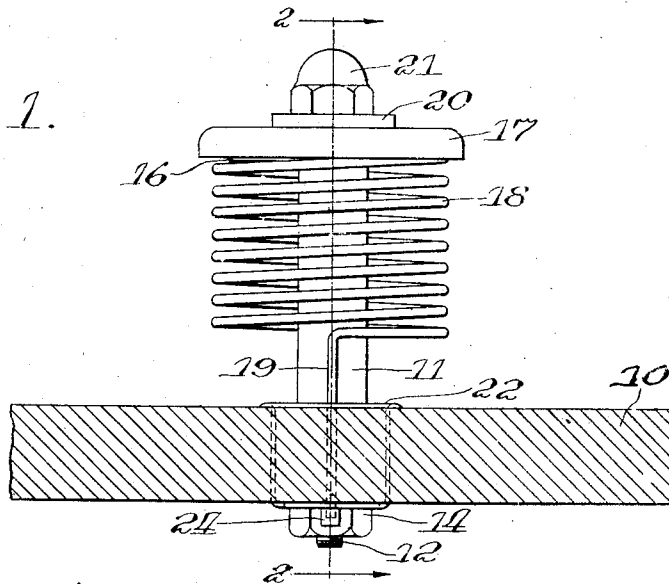
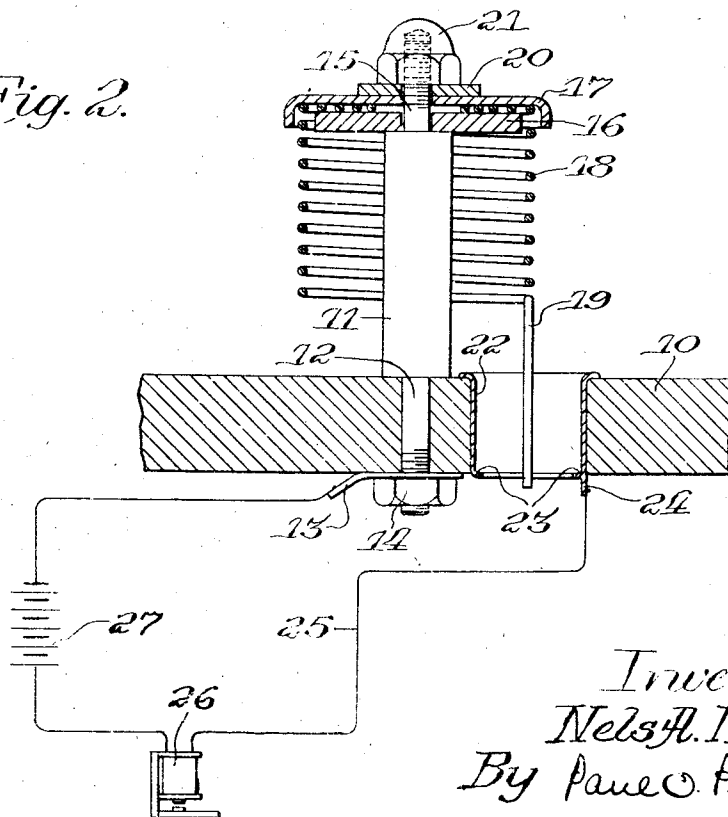


Fig. 2.



Inventor
Nels H. Nelson
By Paul C. Pippel
Att'y.

UNITED STATES PATENT OFFICE

2,109,678

CONTACT SWITCH FOR BALL ROLLING GAMES

Nels A. Nelson, Chicago, Ill., assignor to Raymond T. Moloney, Chicago, Ill.

Application January 12, 1937, Serial No. 120,256

5 Claims. (Cl. 200—52)

The invention relates to a contact switch for use in ball rolling games, or the like.

These games usually embody a table over which a ball is freely rollable to engage suitable targets disposed thereon, said targets in the present instance being in the form of a special means adapted to be bumped or contacted by the ball to cause momentary closing of a circuit with a suitable source of energy, said circuit including an electromagnetic relay to operate a score register, dispenser, or like game auxiliary.

More particularly, the invention relates to the target structure which in the present instance is in the form of a resilient circuit closer, so disposed on the game table as to be contacted by a freely rolling ball, or other playing piece, momentarily to close the associated circuit.

The main object of the invention is to provide a novel form of obstacle or target for use with ball rolling games.

Another object is to provide such obstacle in the form of a normally open resilient switch or circuit closer, which when bumped or contacted by a free rolling ball momentarily closes to establish an electric circuit.

Still another object is to provide such a contact switch in the form of a pendant coil spring carried above a game board, and including a leg movable, when the spring is bumped, to engage a ferrule, or the like, disposed in the board; both the spring and ferrule constituting electrical conductors disposed in a circuit.

Other important objects will become apparent to those skilled in this art as the disclosure is more fully made.

Briefly, these objects may be attained in a ball rolling amusement game having a table over which a ball or balls may be propelled, or otherwise rolled with the object of causing the ball to bump or contact the switch structure of this invention. Said switch comprises a conductor standard mounted in the table and carries a coil spring having a leg pendantly disposed in a conductor ring located in the table slightly offset from the standard. The standard and ring are wired in a circuit with a source of energy and a relay coil in such a manner that when a ball rolling on the table bumps the coil spring from any angular direction whatsoever, the leg of the spring will be caused momentarily to contact the conductor ring in the board to establish the circuit for operating the relay coil and any desired game auxiliary device.

In the sheet of drawings:

Figure 1 is a front elevational view of the

bumper obstacle mounted on a game board; and, Figure 2 is a side sectional view thereof, taken along the line 2—2 of Figure 1, looking in the direction of the arrows; a wiring diagram being also shown in illustrative form.

The game board or table is shown at 10, the same being either disposed horizontally or slightly tilted from the horizontal in a manner well known in this art. A support or standard 11 is mounted in an upright position on the board, the same having a reduced threaded shank 12 passed through the board, or table 10, as shown, there being provided a metallic clip 13 and nut 14, below the table to secure the standard to the table, in an obvious manner.

The upper end of the standard also is reduced to form a threaded shank 15, the shoulder thus provided, carrying a horizontal washer 16. The shank above the washer 16 carries a cup-shaped cap 17 and between the cap and washer is the end of a coil spring 18, which at its lower end terminates in a pendant spring leg 19. The spring assembly is made secure by a lock washer 20 and nut 21, as shown.

Below the leg 19 and offset from the standard 11, the table 10 is formed with an aperture in which is securely seated a conductor ferrule 22 into which the leg 19 is suspended and normally out of contact therewith. Said ferrule at its lower end is formed with an intumed annular flange 23 and an integral depending extension 24.

The clip 13 and extension 24 are disposed, for example, in an electrical circuit 25 for an electromagnetic relay coil 26, and with a source of energy, such as the battery 27.

In use, when a ball rolling on the table 10 bumps or hits the spring 18 to rebound therefrom, the impact moves the spring sufficiently to cause the leg 19 thereof to contact the flange 23 of the ferrule, momentarily to close the circuit 25 and cause energization of the coil 26 for any desired purpose. It can be seen since the leg 19 is normally disposed at the center of the annular ferrule 22, that no matter from what angular direction a ball strikes the spring it will be operative to close the circuit in the manner described.

In a ball rolling game any desired number of such spring switch obstacles or targets may be placed on the board in any suitable spaced relationship and consequently, as in pin ball games generally, a single ball may successively bump and close a number of the switch devices.

It is the intention to cover all changes and modifications of the example of the invention

herein chosen for purposes of the disclosure, which do not constitute departures from the spirit and scope of the invention.

What is claimed is:

- 5 1. In a ball rolling game, a substantially horizontal table, the combination with said table of a substantially vertical support thereon carrying a coil spring coiled around the support and including a down-turned extension, said spring
0 constituting one conductor member of a switch disposed in an electric circuit, the other member of the switch comprising a conductor ferrule carried by and embedded in the table and adapted to be engaged by said extension which
15 depends into said ferrule, said members being normally gapped apart to hold the circuit open but adapted to close momentarily to establish the circuit when a ball rolling on the table bumps the spring.
- 20 2. In a ball rolling game, a substantially horizontal table, the combination with said table, of a substantially vertical standard thereon carrying a coil spring coiled around the standard and having a leg extending downwardly into an
25 opening formed in the board, said spring and support constituting one side of a circuit closer disposed in an electric circuit, the other side of the switch comprising a conductor disposed in said opening, said spring when bumped by a ball
30 rolling on the table being movable to engage the leg with the conductor in said opening momentarily to establish the circuit.
3. In a ball rolling game, a substantially horizontal table, the combination with said table,
35 of a substantially vertical standard thereon carrying a coil spring coiled around the standard and having a leg extending downwardly into an opening formed in the board, said spring constituting one side of a circuit closer disposed in
40 an electric circuit, the other side of the switch comprising a conductor ferrule carried by the table within said opening, said ferrule including an inturned annular flange, said spring when bumped by a ball rolling on the table being mov-

able to engage the leg with the flange momentarily to establish the circuit.

4. In a ball rolling game having a substantially horizontal table over which balls are rollable, the combination with said table of a substantially vertical standard anchored in said table with its lower end carrying on the underside of the table a lead for an electric circuit and its upper end extending a substantial distance above the top surface of the table, a coil spring surrounding the standard, means carrying said spring pendantsly from the upper portion of the standard above the table with the coils of the spring spaced from the standard to enable the spring to be resiliently flexed when bumped by
15 a ball rolling on the table, said spring being in the aforementioned circuit and constituting a conductor, and conductor means in said circuit and embedded in the table at a point spaced from the standard and engageable by a portion of the
20 spring when it is flexed to close the aforementioned circuit.

5. In a ball rolling game having a substantially horizontal table over which balls are rollable, the combination with said table of a substantially vertical standard anchored in said table with its lower end carrying on the underside of the table a lead for an electric circuit and its upper end extending a substantial distance above the top surface of the table, a coil
30 spring surrounding the standard, means carrying said spring pendantsly from the upper portion of the standard above the table with the coils of the spring spaced from the standard to enable the spring to be resiliently flexed when
35 bumped by a ball rolling on the table, said spring being in the aforementioned circuit and constituting a conductor, and a conductor ferrule embedded in an opening formed in the table at a point spaced from the standard and engageable by a portion of the spring extended into said ferrule when the spring is flexed to cause closing of the aforementioned circuit.

NELS A. NELSON.