

# UNITED STATES PATENT OFFICE.

ELIE SAVOYE, OF ST. ETIENNE, FRANCE.

CONTROLLER FOR GROUPS OF ELECTRIC CIRCUITS FOR ADVERTISING AND OTHER PURPOSES.

1,184,264.

Specification of Letters Patent.

Patented May 23, 1916.

Application filed January 14, 1915. Serial No. 2,238.

*To all whom it may concern:*

Be it known that I, ELIE SAVOYE, a citizen of the French Republic, residing at St. Etienne, in France, have invented certain new and useful Improvements in Controllers for Groups of Electric Circuits for Advertising and other Purposes, of which the following is a specification.

The object of this invention is to provide improved means whereby a plurality of electric circuits are severally opened and closed in varying order. To this end I use a ball placed in a container to which I impart movement so that the ball rolls therein in an irregular manner, the container being associated with a series of make and break devices, which appertain to the several circuits and are adapted to be actuated or put into operation by the ball in the course of its irregular movements.

The apparatus is primarily intended for use in connection with advertising appliances comprising lamps of different colors or the like, but it can also be used for games, and for controlling ornamental light installations, and in fact for any purpose in which the making and breaking of a plurality of electric circuits in irregular order is required.

The invention is illustrated in the accompanying drawing, showing two embodiments thereof in Figures 1 to 3 and in Figs. 4 and 5 respectively. Fig. 1 is a side view, partly in section. Fig. 2 a plan view, and Fig. 3 a sectional side view of part of the apparatus in another position. Fig. 4 is a sectional side view, and Fig. 5 a plan view.

Referring to the construction shown in Figs. 1 to 3, *a* designates a metal box, a portion of whose interior at one end is divided into open compartments by walls *b*. The box is arranged to rock on a pivot *c* at its other end, the pivot being at the top of a metal support *d* fixed to a wooden base *e*, and the box contains a metal ball *f*, which can enter any of the compartments formed by the walls *b*. On the floor of the box there are bosses *g* forming obstacles to the rolling of the ball, so that the ball will take an irregular course from one end of the box to the other when the box is rocked, and therefore will sometimes enter one compartment and sometimes another, when the right hand end of the box is lowered. The box is covered with a sheet *h* of metal gauze or the

like. At the end remote from the pivot *c* the box carries a roller *i* by means of two arms *j*, and this roller lies in the path of a cam *k* fixed to a shaft *l* mounted in bearings *m*, so that when the shaft is rotated the roller is alternately lifted and dropped by the cam, and the box is by this means rocked on its pivot. The cam path is indicated by a broken line in Figs. 1 and 3, and Fig. 3 shows the roller lifted by the cam.

Below the box there is a frame comprising vulcanite plates *n*, supporting a series of vertical metal rods *o*, and each of these rods extends through a hole into one of the compartments in the box, the hole being of such size that the rod never touches the box. A strip of felt *p* is placed on the frame to support the edge of the box when the latter is dropped by the cam. The rods *o* are severally connected to wires *q*, *r*, *s*, *t*, forming portions of the several circuits to be opened and closed. A wire *u*, forming another portion common to all the circuits, is connected to the support *d*. The wires *q*, *r*, *s*, *t*, may for example be connected to lamps of different colors. The closing of the circuits is effected by contact of the ball *f* with the rods *o*, connection between the wire *u* and the wires *q*, *r*, *s* or *t* being made through the support *d*, box *a*, ball *f*, and the rod *o*, against which the ball rests.

Fig. 2 shows the ball against the rod to which the wire *s* is connected, so that the lamp or series of lamps connected to the wire *s* is alight. When the box is tilted, as shown in Fig. 3, the ball *f* rolls away from the rod and contact is broken. When the box is again dropped by the cam the ball rolls back into one of the compartments and closes one of the circuits. It will be understood that any number of circuits may be used, and that a number of such appliances may be arranged together and collectively actuated, the several shafts being joined to each other, with the cams parallel or in different phases.

In the embodiment of the invention shown in Figs. 4 and 5 the rocking box or ball container designated *a*<sup>10</sup> is longitudinally divided by partitions *a*<sup>1</sup> so that it comprises three chambers, each containing a ball *f*<sup>1</sup>. Each of these chambers has at each of its ends a series of open compartments separated by short walls *b*<sup>1</sup>. Elastic

switch arms  $o^1$ , mounted at  $o^2$ ,  $o^3$ , extend into the said compartments, so that when the balls roll against them they are pressed against contacts  $x$ , for closing the circuits  $q^1$ ,  $r^1$ ,  $s^1$  of the lamps Q, R, S Fig 5 shows only one set of circuits and lamps, associated with one of the chambers, but there are similar sets for the other two chambers. Each of the circuits has two branches, with connections to contacts  $x$  at opposite ends of the chamber The switch arms  $o^1$  are connected by wires  $o^2$  to pairs of sector-shaped contacts  $y$ ,  $y^1$  arranged around a shaft  $l^1$  The latter carries a cam  $k^1$ , by means of which it rocks the ball container  $a^1$  on a shaft  $c^1$  so that the balls  $f^1$  run to and fro in the container between the switch arms at its ends, the course of the balls being rendered irregular by pins  $g^1$  fixed to the floor of the container On the shaft  $l^1$  are loosely mounted brushes  $z$  working between the contacts  $y$ ,  $y^1$  these brushes being connected by springs  $s^1$  to arms  $l^1$  fixed to the shaft In the course of the rotation of the shaft  $l^1$  the arms  $l^1$  drag around the brushes, which work with considerable friction between the sectors  $y$ ,  $y^1$ , so that when a brush has completed its course between two sectors it is abruptly pulled away from them by the spring  $s^1$  and the circuit is broken with a minimum of sparking, or without any spark at all The brushes and sectors operate in conjunction with the switches  $o^1$  for closing the lamp circuits, but the brushes break away from the sectors before the balls release the switch arms  $o^1$  so that the circuits are broken abruptly With the balls rolling quickly from one end of the box to the other the interruption of the illumination is only momentary, but the lamps are constantly changed

What I claim as my invention and desire to secure by Letters Patent of the United States is —

1. In apparatus for the purpose set forth, the combination of a container, means dividing a portion of the interior of said container into open compartments, a ball in said container adapted to enter any one of said compartments, electric contact devices in said compartments adapted to be put into operation by said ball, and means for imparting motion to said container whereby said ball is caused to roll into and out of said compartments.

2 In apparatus for the purpose set forth,

the combination of a container, means dividing a portion of the interior of said container into open compartments, obstructions on the floor of said container, a ball in said container adapted to enter any one of said compartments, electric contact devices in said compartments adapted to be put into operation by said ball, and means for imparting motion to said container whereby said ball is caused to roll into and out of said compartments.

3 In apparatus for the purpose set forth, the combination of a pivoted container, means dividing a portion of the interior of said container into open compartments, a ball in said container adapted to enter any one of said compartments, electric contact devices in said compartments adapted to be put into operation by said ball, and a cam for rocking said container, whereby said ball is caused to roll into and out of said compartments

4 In apparatus for the purpose set forth the combination of a pivoted container, means whereby a portion of the interior of said container at each of two opposite ends thereof is divided into open compartments, a ball in said container, adapted to enter any one of said compartments, electric contact devices in said compartments, adapted to be put into operation by said ball, and means for rocking said container, whereby said ball is caused to roll from end to end thereof

5 In apparatus for the purpose set forth, the combination of a container, means dividing a portion of the interior of said container into open compartments, a ball in said container adapted to enter any one of said compartments, electric contact devices in said compartments adapted to be put into operation by said ball, means for imparting motion to said container whereby said ball is caused to roll into and out of said compartments, and make and break devices electrically connected to said contacts, actuated by the means imparting motion to the container, and arranged to become operative as circuit breakers shortly before the ball rolls out of said compartments.

In witness whereof I have signed this specification in the presence of two witnesses

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Witnesses

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2 SHEETS—SHEET 1

FIG-1

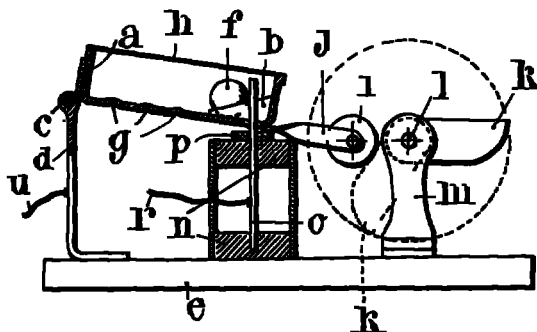


FIG-2

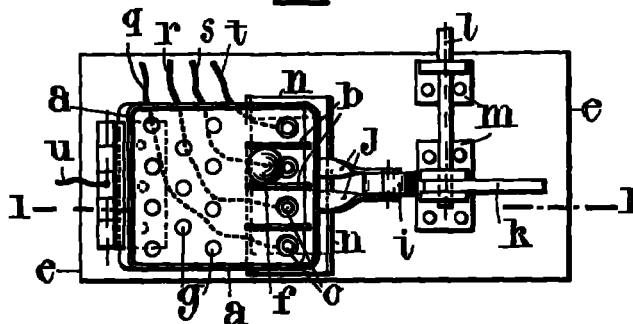
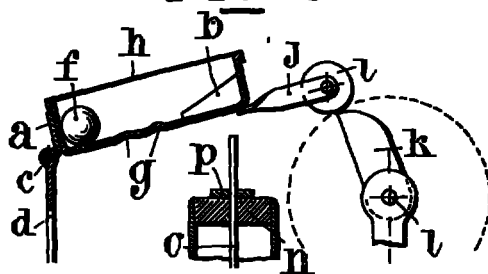


FIG-3



Witnesses

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2 SHEETS—SHEET 2

FIG-4

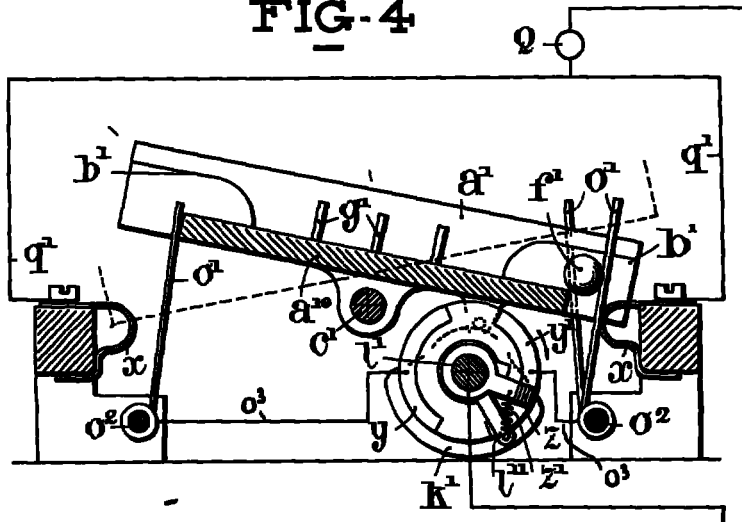
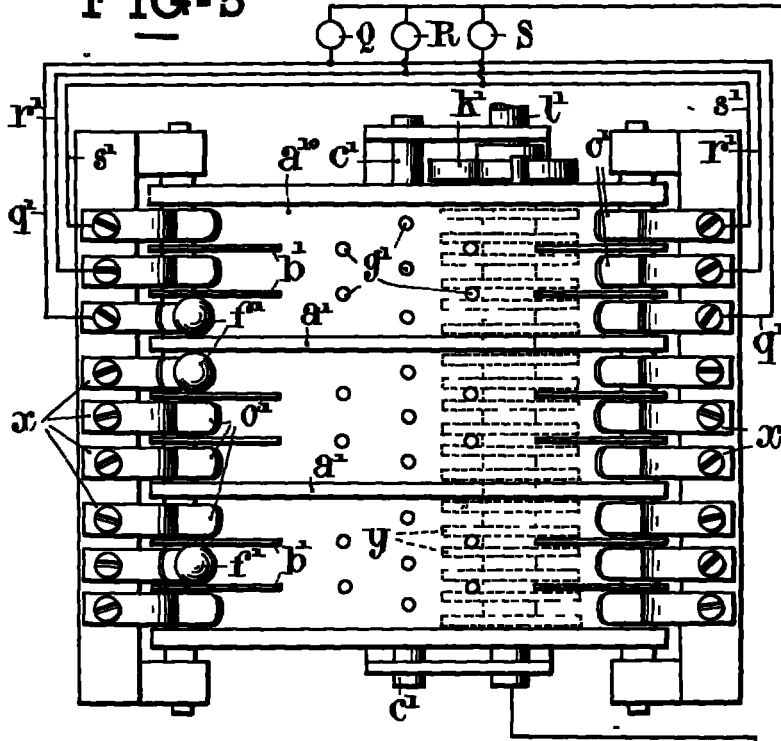


FIG-5



Witnesses

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