(No Model.) 3 Sheets—Sheet 1.

H. G. ROGERS

ELECTRICAL TOY.

No. 418,069. Patented Dec. 24, 1889.

FIG. 1.

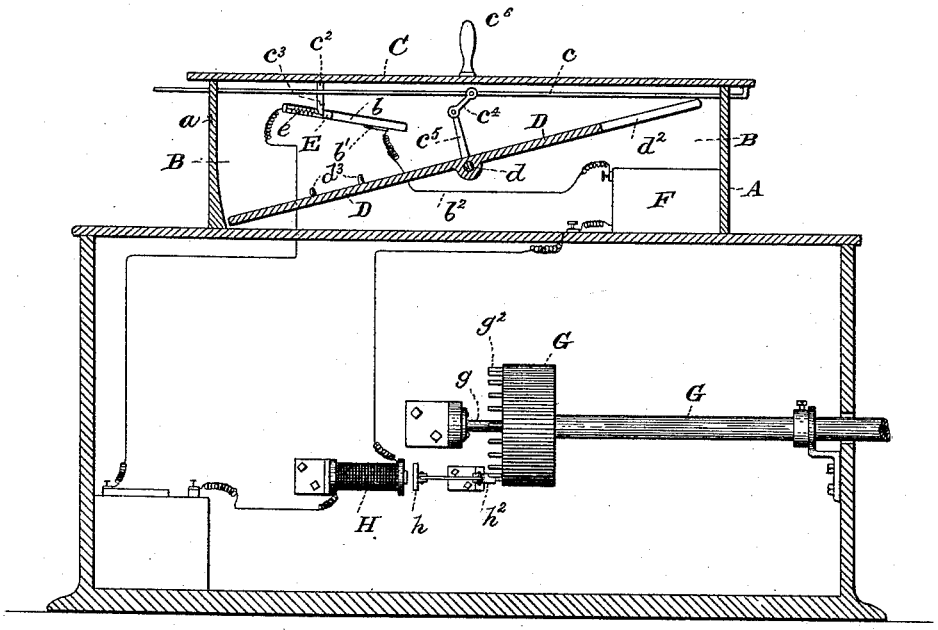
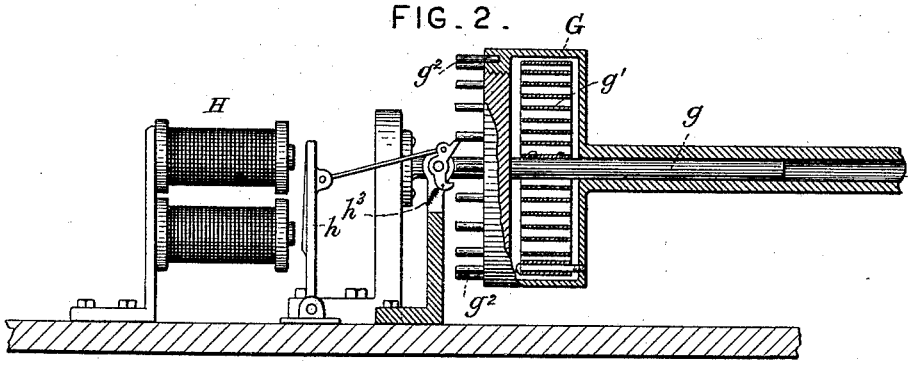


FIG. 2.



Attest,
Geo. T. Smallwood.
Philip Mauro.

Inventor,
Henry Gustave Rogers.

(No Model.)

3 Sheets—Sheet 2.

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ELECTRICAL TOY.

No. 418,069. Patented Dec. 24, 1889.

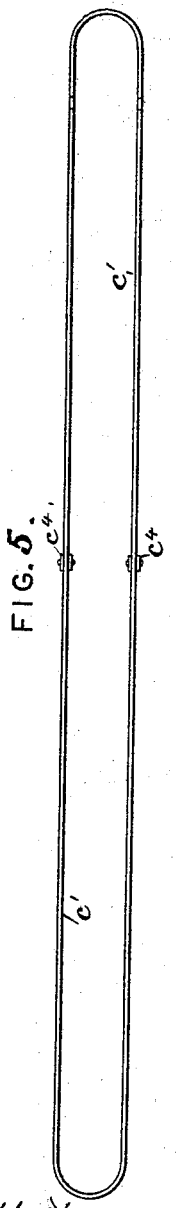

FIG. 5.

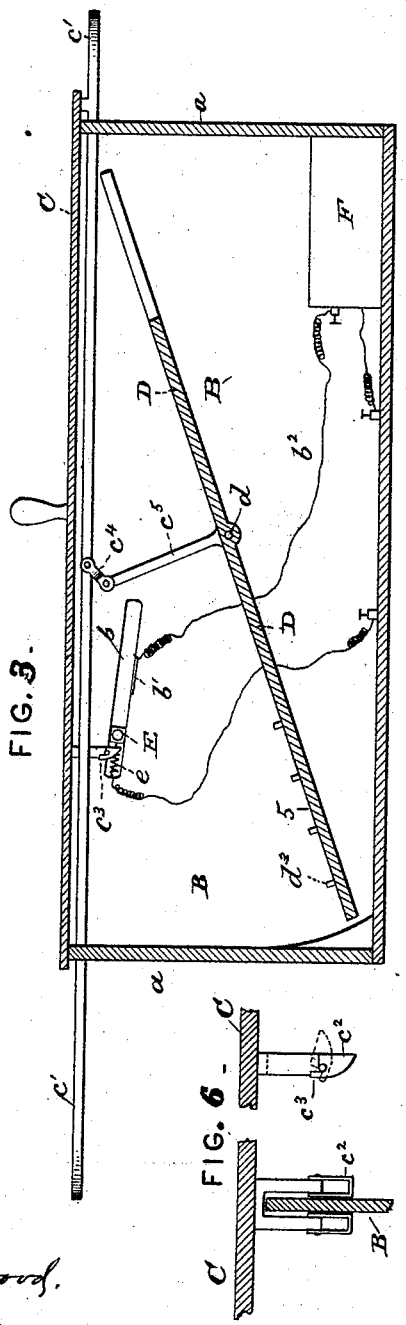

FIG. 3.

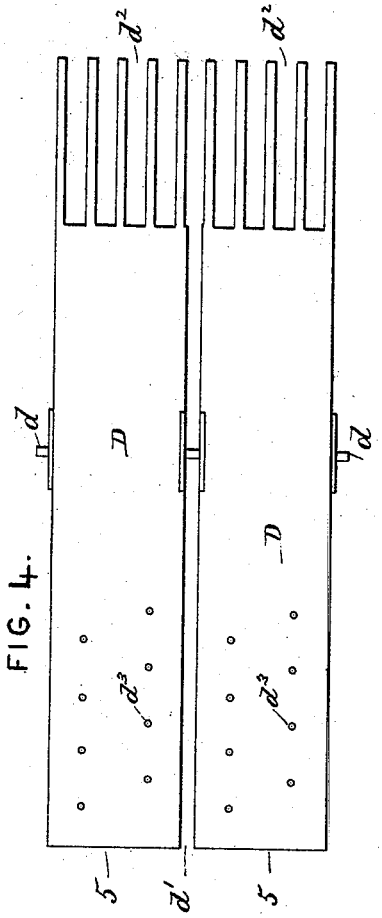

FIG. 4.

FIG. 6.

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(No Model.) 3 Sheets—Sheet 3.

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No. 418,069. Patented Dec. 24, 1889.

FIG. 7.

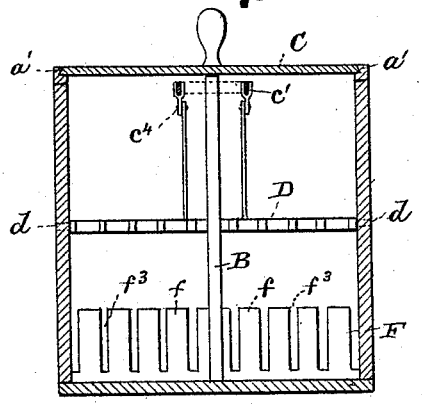


FIG. 8.

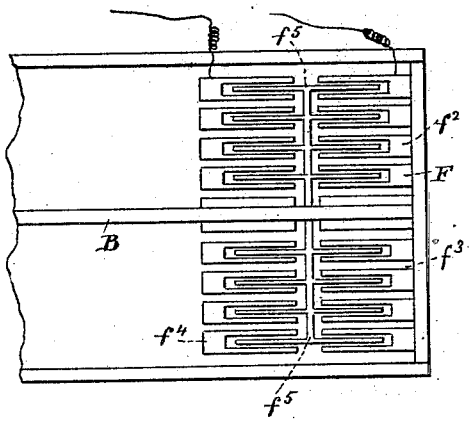


FIG. 11.

FIG. 9.

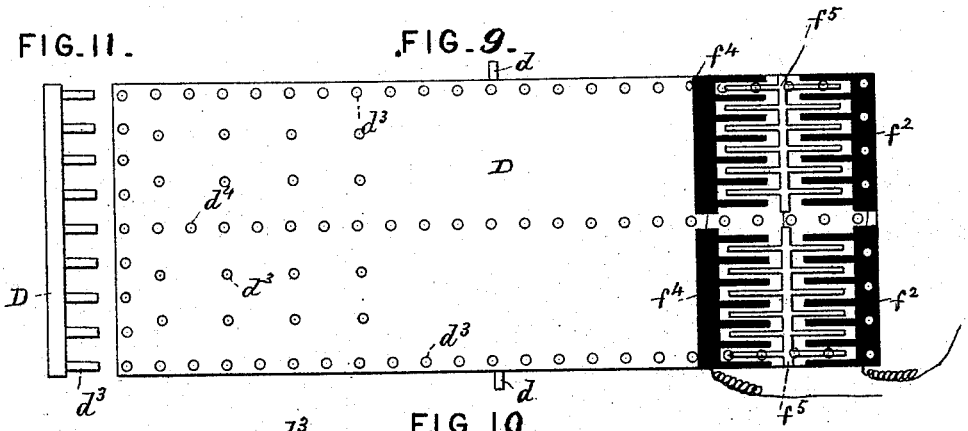


FIG. 10.

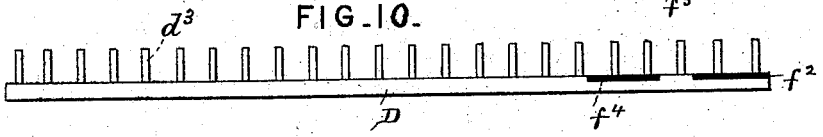


FIG. 12.

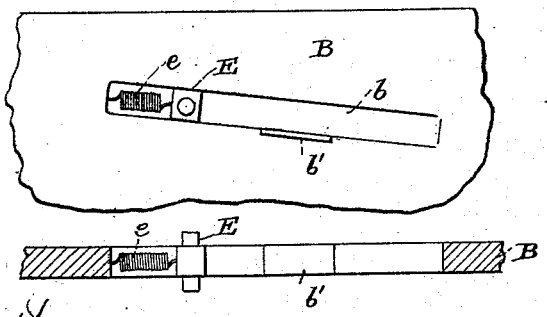
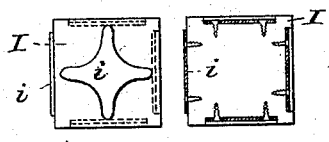


FIG. 13.



Inventor,
Henry Gustave Rogers

Attest:
Geo. T. Swallwood
Jas. K. McCathran

UNITED STATES PATENT OFFICE.

HENRY GUSTAVE ROGERS, OF WASHINGTON, DISTRICT OF COLUMBIA.

ELECTRICAL TOY.

SPECIFICATION forming part of Letters Patent No. 418,069, dated December 24, 1889.

Application filed September 27, 1888. Serial No. 286,507. (No model.)

To all whom it may concern:

Be it known that I, HENRY GUSTAVE ROGERS, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Electrical Toys; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to electrical toys or game apparatus, or devices of an analogous character, and has particular reference to means for setting into operation devices controlled by an electro-magnet.

Numerous automatic or mechanical toys have heretofore been devised which, upon being set into operation, perform certain acts or motions. Such apparatus have been used merely for amusement, and also, by attracting attention, to advertise or draw custom. The mechanism herein described, and which constitutes the present invention, may be employed to set such devices into operation; or it may be used to display a sign or placard for advertising purposes, or to perform any other mechanical operation for which the motion of the armature of an electro-magnet may be utilized.

The invention comprises means whereby the closing of an electric circuit is effected only upon certain contingencies determined by the falling of a die (or dice) in a certain predetermined position—that is to say, when certain faces of the die (or dice) are turned uppermost, the electrical circuit remaining always unaffected save when such face or faces is or are exposed.

The invention further comprises means for shaking the dice, and also specially-constructed dice adapted to act as a bridge or circuit-maker to unite electrically the terminals of an electric circuit.

The invention also includes certain details of construction and devices for better carrying out the objects of the invention, as hereinafter more fully set forth.

In the drawings the mechanism constituting the present invention is shown as setting into operation an escapement controlling the motions of a sleeve, which is actuated by any ordinary motive power, such as a spring. It will be understood that the motions of this sleeve may be utilized to turn an advertising-wheel or do any other work, as may be desired.

In the accompanying drawings, forming part of this application, and in which similar letters of reference indicate the same parts in all the figures, Figure 1 is a view of the apparatus, showing a dice-box supported on a stand in which are located the escapement, battery, and connecting-wires. Fig. 2 is a view of the escapement and magnet, showing the sleeve in section. Fig. 3 is a sectional view of the dice-box, showing the oscillating tray, the tablet on which the dice come to rest, the partition with the circuit-closer, the catch, and connecting-wires. Fig. 4 is a plan view of the oscillating tray. Fig. 5 is a plan view of the rod-connection between the sliding lid and the oscillating tray. Fig. 6 shows a side and front view of the catch. Fig. 7 is a sectional back view of the box. Fig. 8 is a plan view of the tablet. Fig. 9 is a plan view of a modified form of the tray. Figs. 10 and 11 show the side and front of the same. Fig. 12 is a view of the partition, showing the slot and circuit-closer. Fig. 13 illustrates the dice.

A is the casing of the dice-box, which may be made of glass or mica to show the dice as they are shaken, and extends on all sides *a a*.

a' represents rails formed with grooves in which the lid may slide.

B is the partition, constructed of non-conducting material and placed in the length of the box and flush with the top.

b is a slot in the partition formed on an incline, and is provided with a conducting-piece *b'*, which is in circuit with the battery by means of the wire b^2, laid in a groove so as to be flush with the surface of the partition.

C is the sliding lid. To the under side at one end is attached a rod *c'*, which extends into the middle of the box through an aperture in the side. To the under side of the lid is hinged a catch c^2, which swings to the right in the drawings, but is prevented by a

head c^3 from swinging. The rod c' is connected by means of links c^4 to the arm c^5 on the oscillating tray.

c^6 is a knob on the upper side of lid, by which it may be drawn.

D is the oscillating tray, constructed of any desired material, preferably of ivory or hard rubber. It is swung in bearings in the sides of the box by means of the shaft d, which may extend the whole width of the tray to give strength to it. In the center of the tray is a slot d', for the reception of the partition B.

d^2 are slots formed in one end of the tray and permitting it to descend below the surface of the tablet F, on which the dice are to fall.

d^3 are posts let into the tray, the object of which is to cause the dice to turn over as they travel from side to side.

E is a circuit-closer constructed of metal, and may either take the form of a roller or merely a flat piece. It is held toward the end of the box which is first opened by means of a spiral spring e and plays in the incline slot b. Its two ends protrude beyond the slot to enable the catch c^2 to engage and carry it a certain distance until the incline of the slot brings the piece down sufficiently for it to leave the catch, when the spring will draw it back.

F is a tablet on which the dice fall, and, as shown in Fig. 7, is formed of a series of upright pieces of non-conducting material, on the top of which are placed narrow strips of metal f, cut in the shape of combs.

The method of constructing the tablet is to cut wide slots or grooves in a block of ivory or hard rubber, to lay wires or the metallic combs separate from one another on the protruding surface. The relative sizes of the protruding portions of the tablet and the size of the slots cut in the end of the oscillating tray must be such that when that end of the tray descends far enough the projections on the tablet will extend upward through the tray. The tablet is shown in Fig. 8, f^2 and f^4 being the side combs of metal formed with grooves f^3, Fig. 7, and connected with the battery by terminal wires, and f^5 is a centrally-located double comb, the teeth of the centrally-located comb being placed at a very small distance from the teeth of the side combs, so that when the dice fall on the tablet in proper position the electrical resistance may be as small as possible.

G is a sleeve turning loosely on a fixed shaft g, to which is attached one end of a coiled spring g', the other end being attached to the inside of the sleeve.

g^2 g^2 are detents or fingers placed on the sleeve in such a manner as to constitute, with an anchor, an escapement which will allow the sleeve to rotate step by step.

H is a magnet; h, the armature, connected by means of a link to the escapement-anchor h^2, and provided with a spring h^3 to return it to normal position.

I is the die. (Shown in side view, Fig. 13.)

i is a cross-piece forming the conducting-surface, set in the face opposite the six. Each of the faces of the die are provided with a similar cross-like piece of this metal, which may be cemented or screwed into a recess in the face of the die. The conducting-piece that is in the face opposite the number six is allowed to protrude slightly beyond the surface of the die; the other pieces must be set below the surface. The form of the conducting-piece may be cross-like, as shown in the drawings, or any other, as desired or fancied, the end being to close the electric circuit. It is evident that any shape may do as long as sufficient metal be exposed to obtain the object.

The connections are made by the wires, as shown in the drawings, through the different parts, and may be traced out, starting with the battery through the magnet, the metallic side comb f^2, the die, the middle comb f^5, the second die, the piece f^4, the contact b', the circuit-closer, the spring e, and back to the battery.

The different parts having been adjusted together, the dice placed in the box, and the connections made up, on drawing the lid of the box the rod c' will draw the arm c^5 to the right, and the tray will oscillate and shake the dice. As the end of the tray marked 5 rises, the dice fall to the other end and turn over as they come in contact with the posts d^3, and as that end descends still farther it will fall below the surface of the tablet and leave the dice thereon. Should one die fall with the face displaying the "six" and the other die not fall on the same face, it is evident that the circuit will not be closed; but should both dice fall with their faces displaying sixes the circuit will be closed the moment the circuit-closer E passes over the contact-piece b'. This is accomplished by the lid being drawn so far as to disengage the circuit-closer and the catch c^3. The magnet will therefore be energized and draw its armature toward it, thus allowing one of the projections on sleeve G to slip by one end of the anchor. As the circuit is closed only momentarily by the circuit-closer E moving rapidly over the contact-piece b', magnet will release the armature, and the spring attached to the armature will draw the latter back to normal position to meet the next finger, thus arresting the sleeve in its revolution and giving to it a step-by-step motion.

It will be noted that fraud cannot be exercised without great difficulty, for the circuit can only be closed by the two dice when displaying sixes in location on the tablet and the passing of the circuit-closer over the contact-piece. Furthermore, only when the lid is drawn to its full extent will the circuit-closer E be released to pass over the contact-

piece b', and only once can the circuit be closed while the dice are on the tablet, for the moment the lid is pushed back with the intention of again catching the circuit-closer and drawing it onto the contact-piece the oscillating tray will raise the dice from the tablet and prevent the circuit being closed.

Certain modifications of the dice-box may be made, such as only using one die, and therefore doing away with the partition and placing the circuit-closer on one of the sides of the box; or, if three dice are used, it will be necessary to have two partitions and the tablet changed, so as to have the circuit broken in three places instead of in two.

Instead of a regular box being used, the oscillating tray may be journaled between two side supports and the conducting-surfaces placed on the oscillating tray, as is shown in Figs. 11, 12, and 13. A number of upright pins may also be placed along the sides, so as to prevent the dice being thrown out, and against which the dice will strike and be more thoroughly shaken.

The circuit-closer may be situated in any other position with reference to the different parts, and the connections changed accordingly.

Different forms of such device will be readily imagined, such as substituting a spring-arm instead of a roller or flat piece and coiled spring.

It is immaterial in carrying out this invention whether one die or a greater number of dice be used. It will therefore be understood that where a die is specified as an element of the invention it is intended to include one or more.

Having now described my said invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of an oscillatory tray, a die carried thereby, an electric circuit having open terminals whereon the said die may rest, one face of said die being provided with contacts for closing said circuit, and means for shaking said tray, substantially as described.

2. The combination, with the tablet adapted to carry one or more dice and an electric circuit having terminals in the bottom thereof, of a circuit-controller in the form of a polyhedron having contacts on one face thereof, so as to close the circuit when said face is undermost, substantially as described.

3. The combination of the oscillatory tray, the circuit-controller in the form of a polyhedron having contacts on one face, the electric circuit, and electro-magnetic devices in said circuit for actuating said discharger, substantially as described.

4. The combination of a die having one of its faces provided with an electric conductor, a battery, an open electric circuit, terminals therefor adapted to be closed by said die, and an oscillating tray supporting said die, substantially as described.

5. The combination of a die, having one face provided with an electric conducting-surface, a battery, terminal wires in open circuit therewith, an oscillating tray constructed with one or more projections against which the die or dice may strike and be overturned, and an electrically-controlled escapement actuated when the circuit is closed, substantially as described.

6. The combination of a die having one of its faces provided with an electric conductor, a battery, a tablet having a surface on which the die may come to rest, composed of two or more series of metallic wires or strips of metal connected with the terminal wires of the said battery in open circuit, an oscillating tray whereby the die may be shaken, an electro-magnet in said circuit energized by the closing of the same, and a circuit-closer, substantially as described.

7. The combination of dice, each die having one of its faces provided with an electric conductor, a battery, a tablet having a surface on which the dice may come to rest, composed of separate series of conductors connected to the terminals of the battery in open circuit, a partition extending across the said surface and adapted to keep the dice separate, and an escapement actuated when the circuit is closed, substantially as described.

8. In combination with dice, each die having one of its faces provided with an electric conductor, a sliding piece or rod, an oscillating tray connected to said rod, a partition in said box having an inclined slot, a circuit-closer playing in said slot, a battery, and a tablet having a surface on which the dice may rest, composed of metallic strips connected to the terminals of the battery, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY GUSTAVE ROGERS.

Witnesses:
C. N. BUCKLAND,
ANDREW M. COYLE.