(No Model.)

J. H. IRWIN.

ELECTRIC PYROTECHNICS.

No. 367,402. Patented Aug. 2, 1887.

Fig. 1.

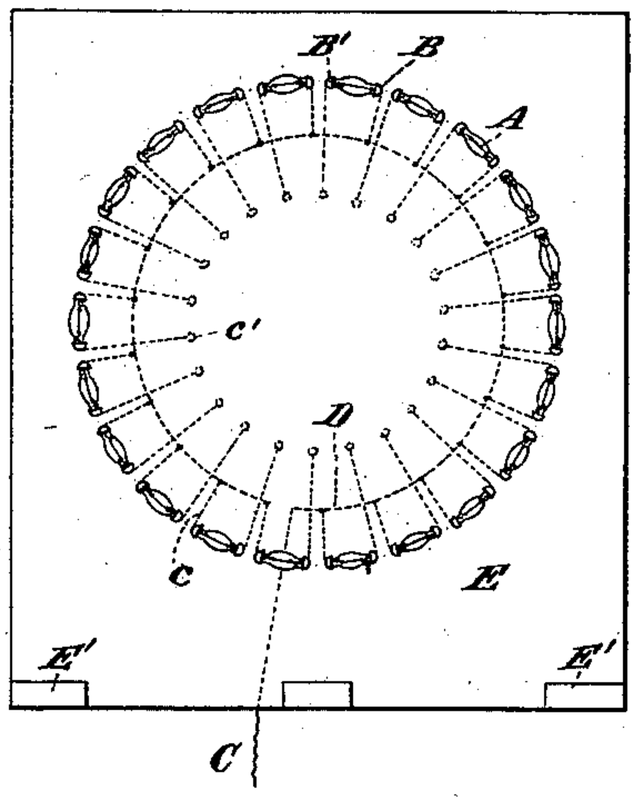


Fig. 2.

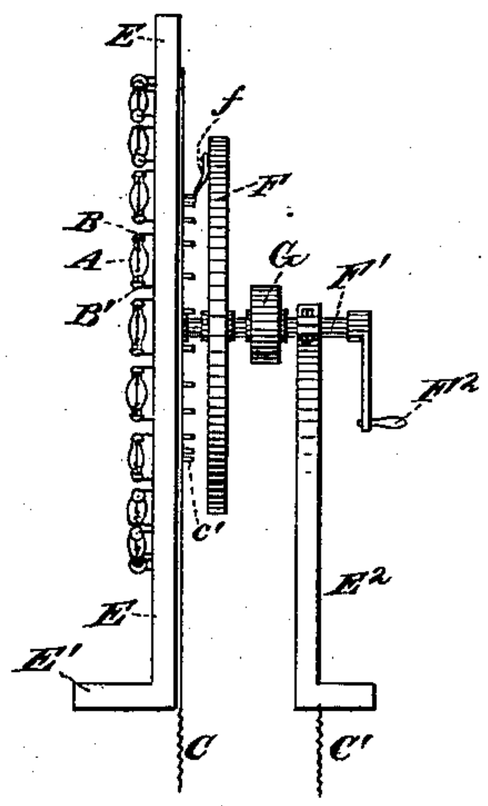


Fig. 3.

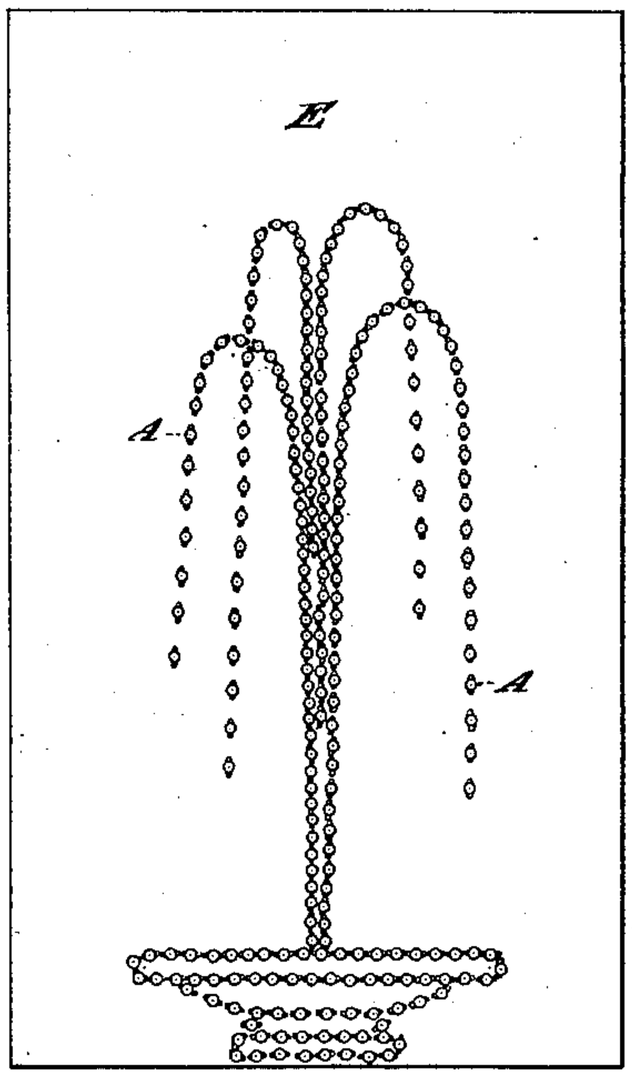


Fig. 4.

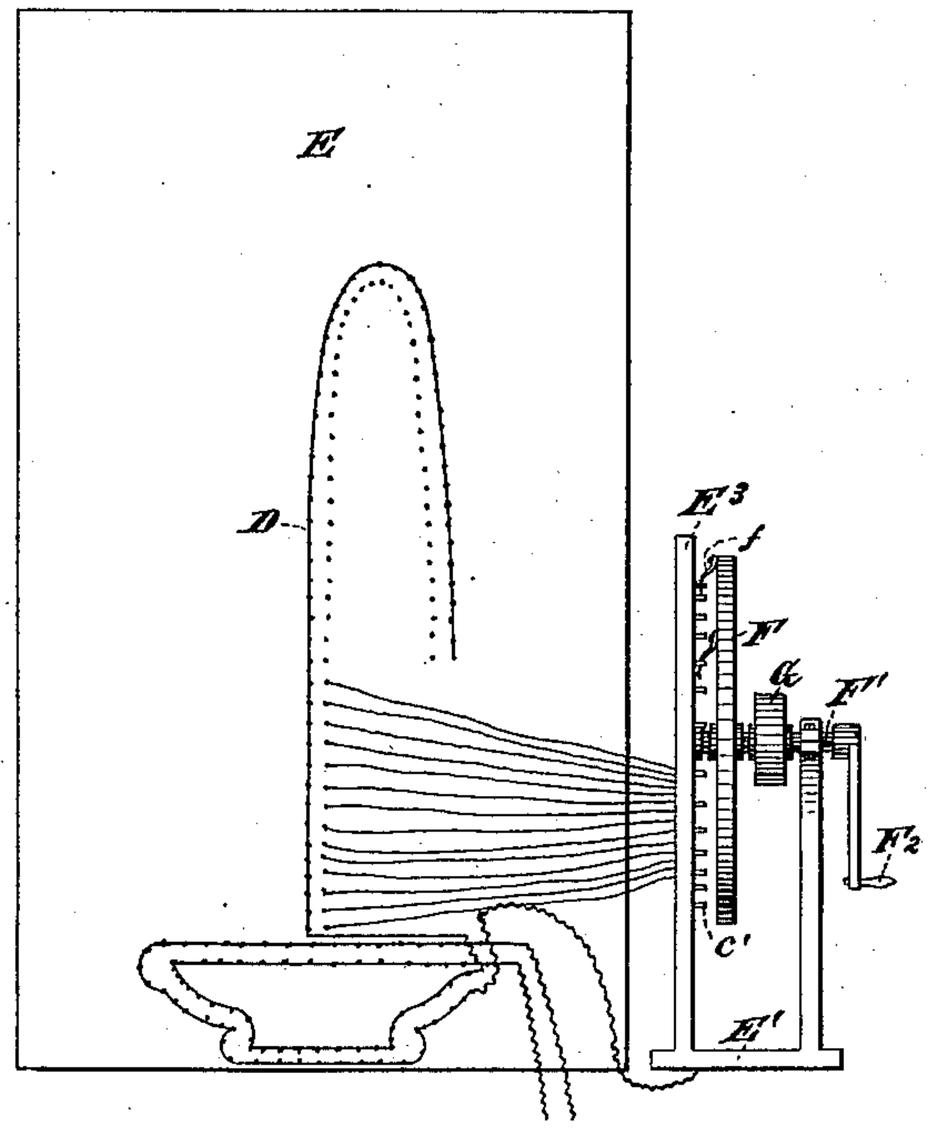
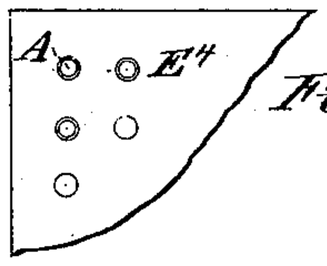


Fig. 5.



Witnesses—
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UNITED STATES PATENT OFFICE.

JOHN H. IRWIN, OF MORTON, PENNSYLVANIA.

ELECTRIC PYROTECHNICS.

SPECIFICATION forming part of Letters Patent No. 367,402, dated August 2, 1887.

Application filed January 23, 1882. Renewed July 1, 1884. Serial No. 136,588. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. IRWIN, of Morton, in the county of Delaware and State of Pennsylvania, have invented certain new and useful Improvements in Electric Pyrotechnics, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates especially to the application of incandescent electric lamps or vacuous cells to the formation of fire-works or electric pyrotechnics for public amusement, &c.; and it consists, essentially, in the method of producing electric pyrotechnics and in the means employed, the preferable means consisting in arranging said lamps or vacuous cells upon a suitable support or background and connecting the lamps to a circuit-breaker in such a manner as to throw into circuit one or more of the lamps at a time, in rotation, producing the effect of moving fire.

By use of my device any kind or style of fire-works may be readily produced, while the cost of production is very little, for the reason that after once setting and arranging the pieces they may be exhibited in operation any number of times, the only expense attending such exhibition being that for generating the electric current and for replacing any lamp that may become broken.

In the drawings, Figure 1 represents a fire-wheel arranged upon an appropriate background. Fig. 2 shows a side elevation of the circuit-breaker. Fig. 3 is a view in front elevation of a fountain of fire, and Fig. 4 shows the arrangement of the conductors and circuit-breakers. Fig. 5 is a plan of a fragment of a perforated shield, behind which lamps may be placed.

Like letters of reference, wherever they occur, indicate corresponding parts in all the figures.

A are incandescent electric lamps or vacuous cells arranged upon a suitable supporting-background, E, Fig. 1, by grasping-arms B B'. Arm B has electrical connection with one pole, C, of the generator through conductor D, arranged at the back of support E, as indicated by the dotted lines *c*. Arm B' passes through the support and terminates in a projection, *c'*. Background E is upheld upon a base, E', as indicated.

F is a wheel constructed of conducting material and having a shaft, F', of like material, extending therethrough, said shaft bearing pulley G and crank F^2. The shaft-supporting wheel F finds a bearing in support E^2, formed of any suitable conducting material. Located upon wheel F are one or more springs or projections, *f*, extending sufficiently beyond the face of the wheel to touch the extremities of arms B', each in succession, when the wheel is rotated. By this means, when a current of electricity passes to the lamps through conductor C, it will only render active the lamp in which the circuit to C' is completed by the contact of projections *f*, the circuit from each lamp being through the wheel, shaft, and support, as plainly shown. When the wheel is rotated rapidly, each lamp being connected and disconnected in so short a space of time will give the appearance of a stream of fire running in a circle, or of a revolving wheel, closely resembling the ordinary fire-wheel in appearance.

The lamps may be arranged circle within circle, or in the form of a spiral running from the center, and any number may be thrown into circuit at once at the pleasure of the operator by using the necessary number of springs or projections upon wheel F. The wheel may be turned by hand by means of a crank, F^2, or a driving-band connecting pulley G with any kind of motive power may be employed for that purpose.

In Fig. 3 the lamps are arranged upon a background in the form of streams of water, rising from a common source, passing upward, and falling back in a graceful curve. The mechanism used for making and breaking the circuit is the same as that explained above, each lamp being connected with one pole of the line C and to a pin, *c'*, upon a board, E^3. Wheel F is constructed and arranged as above described, and when the wheel is rotated the connection with each lamp in the line is made successively, commencing with the lowermost, giving the effect of a rising and falling column of fire. Any number of connections may be arranged upon support E^3, and each may be made to complete the circuit to one,

two, or more lamps located in different parts of the device. The base of the fountain may be connected up permanently, if desired, as indicated in Fig. 4.

If desired, each of the lamps may be inclosed within a case or cell upon the face of the support in such a manner as to throw all the light from the lamp outward, preventing radiation toward the other lamps upon the support; and when incandescent electric lamps of the ordinary construction are employed a shield, E', pierced with holes corresponding in size to the lamps, may be placed therebefore, the bulb of the lamp fitting into the hole, or the light therefrom passing therethrough, the connections and holders of the lamps being concealed by the shield.

It will be seen that my electrical pyrotechnics, when constructed and arranged substantially as above described, admirably answer the various uses and purposes for which they are intended. The bulbs of the incandescent lamps or cells may be formed of white or colored glass, and by appropriate arrangement may be made to represent various-colored fires.

The devices shown illustrate the method of construction and operation employed by me; but of course I do not limit myself to those specified, as it is obvious that the invention admits of an endless variety, which would readily suggest themselves to those skilled in the arrangement of fire-works and in electricity.

Having now fully described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. In electric pyrotechnics, the combination of numerous incandescent lamps mounted on a perforated background by grasping-arms, independent electric circuits to each lamp, terminating in springs or projections, and a rotating circuit-breaker for the purpose of throwing each lamp into circuit successively, substantially as and for the purposes described.

2. In an apparatus for electric pyrotechnics, the combination, with the incandescent electric lamps, of the grasping arms B B', the conductors D, the projection c', the wheel F, and springs or projections f, substantially as and for the purposes described.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

JOHN H. IRWIN.

Witnesses:
F. W. HANAFORD,
A. M. PIERCE.