

(No Model.)

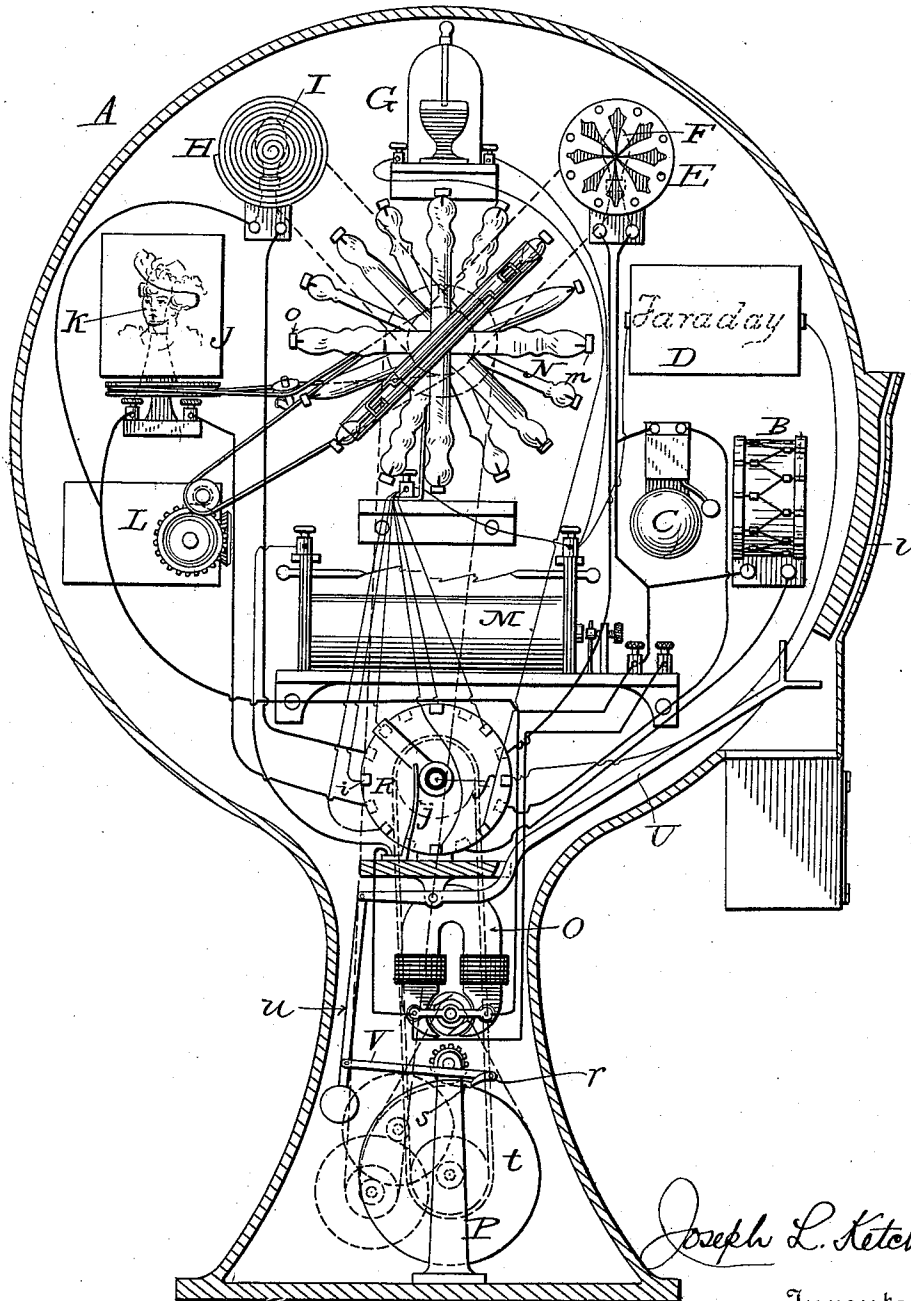
2 Sheets—Sheet 1.

J. L. KETCHER.
ELECTRICAL DISPLAY APPARATUS.

No. 532,790.

Patented Jan. 22, 1895.

Fig. 1.



Witnesses
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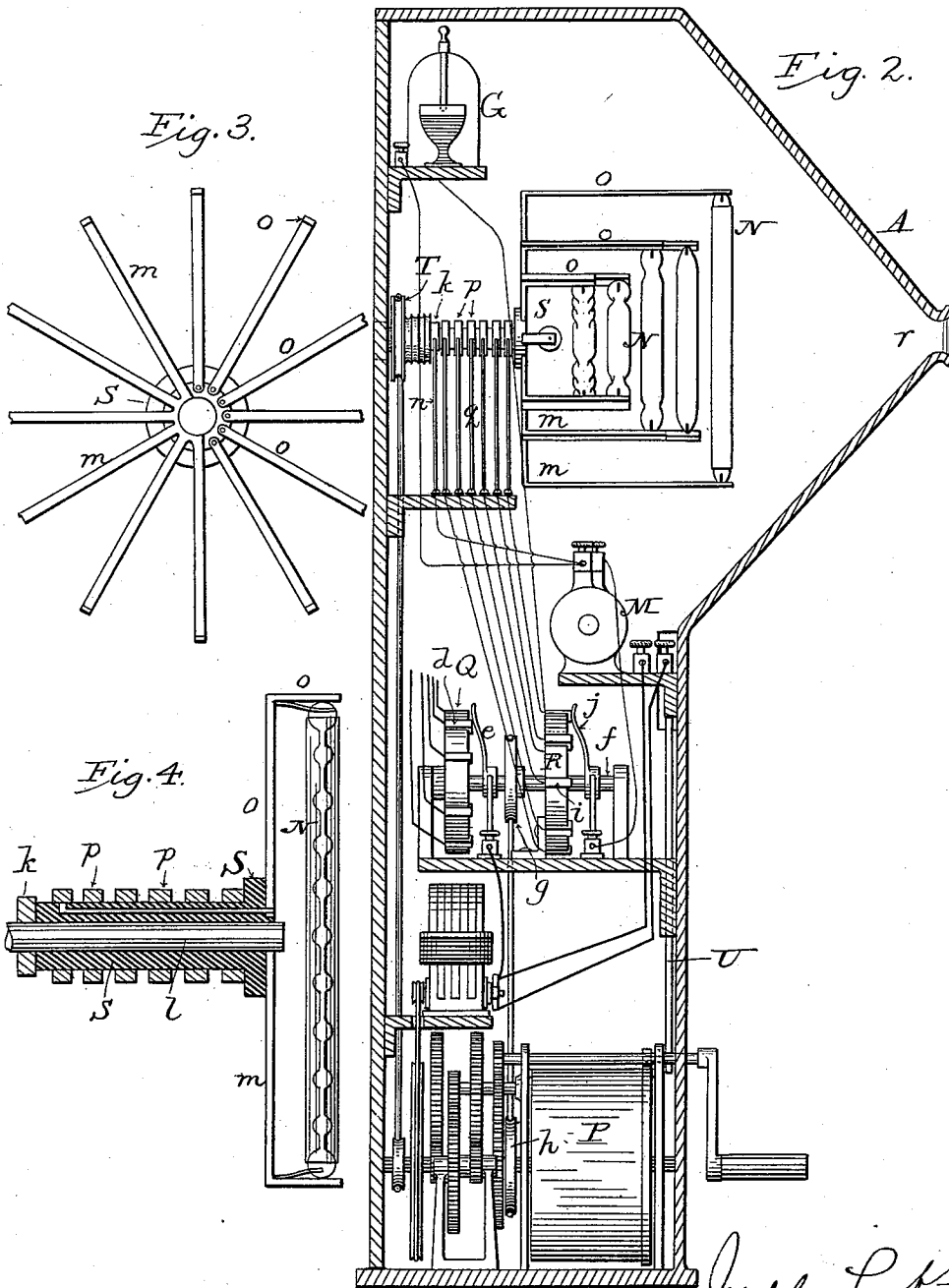
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UNITED STATES PATENT OFFICE.

JOSEPH L. KETCHER, OF NEW YORK, N. Y., ASSIGNOR OF ONE-THIRD TO
WILLIAM L. BEADNELL, OF SAME PLACE.

ELECTRICAL-DISPLAY APPARATUS.

SPECIFICATION forming part of Letters Patent No. 532,790, dated January 22, 1895.

Application filed April 26, 1894. Serial No. 509,102. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH L. KETCHER, a subject of the King of Sweden and Norway, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Electrical-Display Apparatus, of which the following is a specification.

The purpose of my invention is to produce a coin-controlled machine or apparatus for producing various electrical phenomena or effects, and to this end it consists in the construction, combinations, and arrangement of parts hereinafter set forth, and illustrated in the accompanying drawings, in which—

Figure 1 is a face elevation of the apparatus with the front of the inclosing shell or casing removed to show the internal devices; Fig. 2, a vertical section at right angles to Fig. 1; and Figs. 3 and 4, views illustrating details of construction hereinafter referred to.

My invention is primarily designed to give to the masses an opportunity of observing various physical phenomena which at the present time are not within their reach, owing to the costliness of apparatus generally constructed for their production. To this end I combine in one structure various electrical devices, together with a switch for bringing said devices into operation successively, and with a coin-controlled detent or locking dog, the actuation of which releases the switch and permits it to act.

The form and dimensions of the apparatus may be varied at will, and the electrical current employed may be generated within the structure itself, by battery or dynamo-electric generator, or it may be obtained from a general supply main, as found expedient. In the drawings, however, I have represented a dynamo-electric generator, actuated by a spring motor, in order to adapt the apparatus for general application and use, without cost beyond the original outlay and the occasional expenditure of a moderate amount of manual labor.

Referring again to said drawings, A indicates a shell or casing of any convenient form and material,—here represented as of circular form in its upper part, with a suitable base

or pedestal below. Within the upper portion of this shell or casing are arranged the various electrical appliances to be exhibited, here represented as an electric drum B; an electric bell, C; a word or design D, composed of slightly separated and electrically insulated bits of tin foil or other conducting material, which design becomes luminous upon the passage of an electric current, owing to the arcs forming between the bits of foil; rotary disks E of transparent material bearing designs, and illuminated by an electric light F behind them; an electric cascade G; a transparent rotary spiral H illuminated by an electric light I; a rotatable transparency J, illuminated by an electric lamp K; a music box L; a sparking induction coil M, and a rotatable group of Geissler tubes N. These several devices are suggestive rather than essential but will be found quite suitable for general adoption.

O indicates a dynamo-electric generator, and P a spring motor for driving said generator. These may both be of ordinary form and construction, and will be of dimensions suited to the requirements of the apparatus. Motion is transmitted from the motor to the generator by belt or gearing, a simple belt being shown in the drawings, connecting a speed wheel of the motor with the armature shaft of the generator. Instead of this dynamo-generator and its motor, a galvanic battery may be employed, or a storage battery, or any other source of electric energy. Hence the further use of the term generator is to be understood as meaning or comprehending broadly any convenient source of electric energy.

For some of the devices employed a continuous or direct current is necessary or desirable, while for others an alternating current is required. Thus the primary current of the induction coil, the electro-magnet within the drum; the electro-magnet of the bell, and the several lamps receive a continuous current directly from the generator O; while the word or design composed of separated and insulated bits of tin foil; the cascade and the Geissler tubes are supplied with an alternating current from the secondary coil of the inductorium M.

The delivery of current to the several devices is controlled by two switches, Q and R, Figs. 1 and 2. Switch Q consists of a fixed plate or disk, which may conveniently be made of vulcanized fiber or other non-conducting material, provided with a series of conducting studs or blocks *d*, from each of which a separate conductor passes to one binding post or terminal of one or another of the devices which is to receive current through said switch; and of a movable contact arm *e* adapted to travel over and make contact with the studs or blocks *d* in succession. The contact arm *e* is carried by but is electrically insulated from a shaft *f*, which also carries a pulley *g*, and receives motion through a belt from a pulley *h* secured upon the slowly rotating main shaft or motor P. By this arrangement the arm *e* is caused to travel slowly over all the contacts *d*, and thereby to bring each connected device into and retain it in circuit with the source of electric supply for a proper length of time.

The running of the circuits is indicated in the drawings and is so obvious that no detailed explanation is required, it being sufficient to say that one of the conductors of each circuit connects with one of the contacts *d*, and consequently each circuit is completed and interrupted in like manner, and the devices in said circuits consequently go into and out of action consecutively.

The switch R is in all material respects the same as switch Q, but its contact studs or blocks *i* are alternated with the blocks *d* of switch Q, or its contact arm *j* is set out of line with contact arm *e*, so that when either closes a circuit the other shall not do so. The contact arm *j* of switch R is included in the secondary circuit of induction coil M, and controls the delivery of current to the device D, the cascade G, and the Geissler tubes N, and also completes the sparking circuit of the induction coil.

To bring the Geissler tubes into circuit, I mount them in holders carried by a rotatable sleeve S, provided with a pulley, and receiving motion by belt from a pulley on one of the shafts or spindles of the motor P having a higher speed of rotation than the main shaft thereof. The sleeve S is made of or covered with insulating material, and is provided with a metallic hub or collar *k*, which is electrically connected through the spindle or axle *l* on which sleeve S rotates, or otherwise, with a series of radial metallic arms *m*, equal in number to the Geissler tubes employed. A spring arm, *n*, bears upon the hub or collar *k*, and thus delivers electric current from the secondary circuit of induction coil M with which it is connected, to the arms *m*. The sleeve S also carries a second series of arms *o*, each designed to support and carry one end of a Geissler tube, the opposite end of which is carried by one of the arms *m*. Each arm *o* is insulated from the others and from

the spindle or axle *l*, but is electrically connected with a collar *p* on the circumference of the sleeve S. Against each collar *p* bears a contact spring *q*, each electrically connected with one of the contact studs or blocks *i* of switch R. Hence, whenever and so long as arm *j* of switch R rests upon a stud *i*, the secondary circuit of the induction coil M will be completed through the Geissler tube connected with said collar. As above mentioned, the sleeve S carries a pulley T, which is provided with a series of grooves, so that, being itself driven by belt from the motor P, it may in turn transmit motion to the disks E, the spiral H, the transparency J and the drum or cylinder of music box L, as illustrated in Fig. 1. The speed of rotation of sleeve S is such that during the advance of arm *j* of switch R from one contact to the next, the sleeve will make a number of revolutions, and thus the effect produced will be made more striking.

The case A is formed with an opening *r*, through which to observe the devices within.

To control the action of the apparatus I may employ any convenient or usual type of coin-controlled lock or catch. Such a device is illustrated in Fig. 1, and consists of a lever U, pivoted at a suitable point within the case A and having one end arranged directly beneath a coin chute *v*; a second lever V provided with a dog or detent *r* to engage with a shoulder *s* on a disk or wheel *t* carried by the main shaft of the motor P; and a connecting rod *u* extending from lever U to lever V and causing one to move the other. The parts are counterbalanced, so that a slight weight falling upon the free end of lever U shall serve to withdraw the detent, and permit the motor to go into operation. This weight is afforded by the coin, entering through chute *q*,—the coin, however, falling from the lever as the latter tips or rocks upon its pivot, and permitting the detent to re-engage the shoulder *s* as soon as one revolution is completed. In this way each coin deposited will bring about one complete rotation of the main shaft of the motor, and this, under the arrangement set forth, will cause each of the devices described to go into operation at once, and so continue for a predetermined length of time.

Any usual construction and arrangement of appliances may be employed in connection with the coin chute to preclude the introduction of bogus coins, or the release of the mechanism thereby; but such devices are not a part of my invention.

It is obvious that the extent of rotation, the relative number of turns or the different rotary devices, and other details may be considerably varied without departing from the spirit or scope of my invention.

Having thus described my invention, what I claim is—

1. In an electric display apparatus, the combination of a source of electric energy, a series of translating devices for utilizing the cur-

rent so supplied, a switch adapted to direct the current to and divert it from the translating devices in series or succession, a motor for actuating said switch, and a locking device
5 for holding the motor out of action, adapted to be moved or released by the introduction of a coin, substantially as set forth.

2. In an electric display apparatus, the combination of an actuating motor, an electric
10 generator driven by said motor, a detent for said motor, and a coin-actuated lever connected with and serving to withdraw the detent and thereby to permit the motor to operate.

15 3. In an electric display apparatus, the combination of an electric generator, a motor for operating said generator, a series of translating devices, a switch interposed between the generator and the translating devices and
20 adapted to bring said devices successively into

circuit with the generator, and a coin-controlled detent adapted to hold the motor out of action until a coin is deposited and then to permit the motor to operate to a predetermined extent.

4. In combination with a source of electric energy, a series of translating devices, rotatable transparencies adapted and arranged to co-operate with the translating devices, a switch for directing the current to the trans-
30 lating devices in predetermined order, and a motor connected with and serving to actuate said rotatable devices and the switch.

In witness whereof I hereunto set my hand in the presence of two witnesses.

JOSEPH L. KETCHER.

Witnesses:

D. S. HOTALING,
GEO. W. SHORT.