(No Model.) 4 Sheets—Sheet 1.

J. W. DAWSON.

COIN CONTROLLED MACHINE FOR AUTOMATICALLY DISTRIBUTING ELECTRIC CURRENTS.

No. 598,655. Patented Feb. 8, 1898.

Fig. 1.

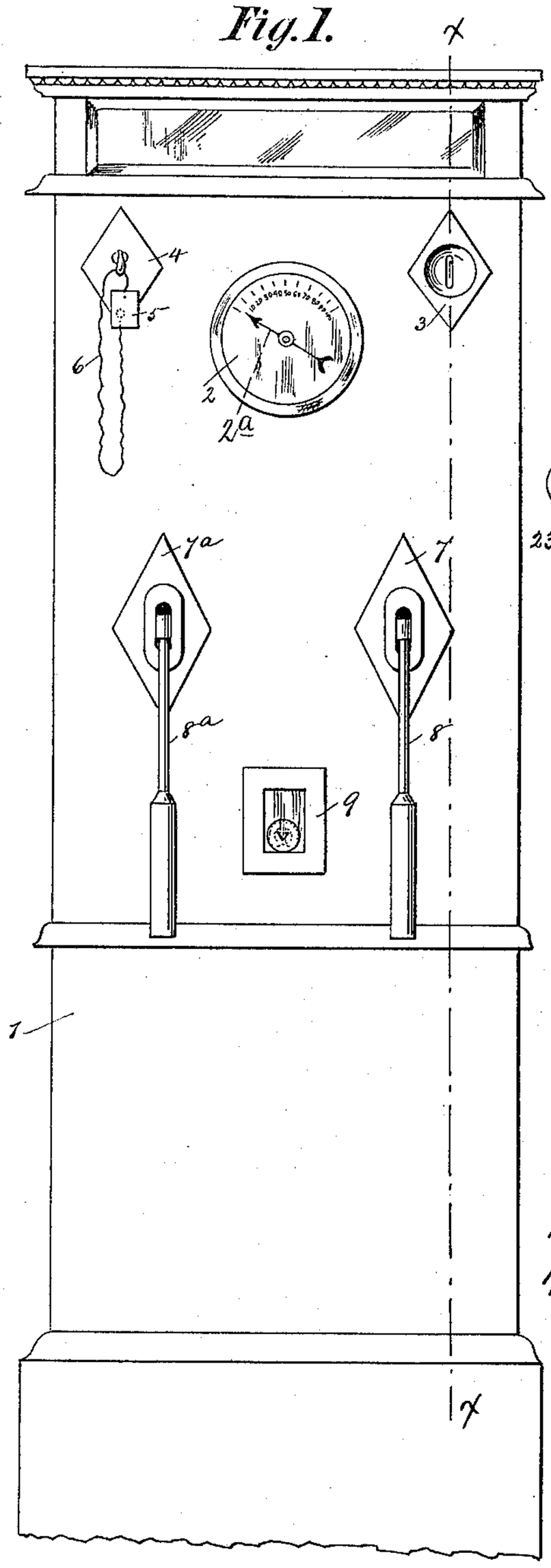


Fig. 2.

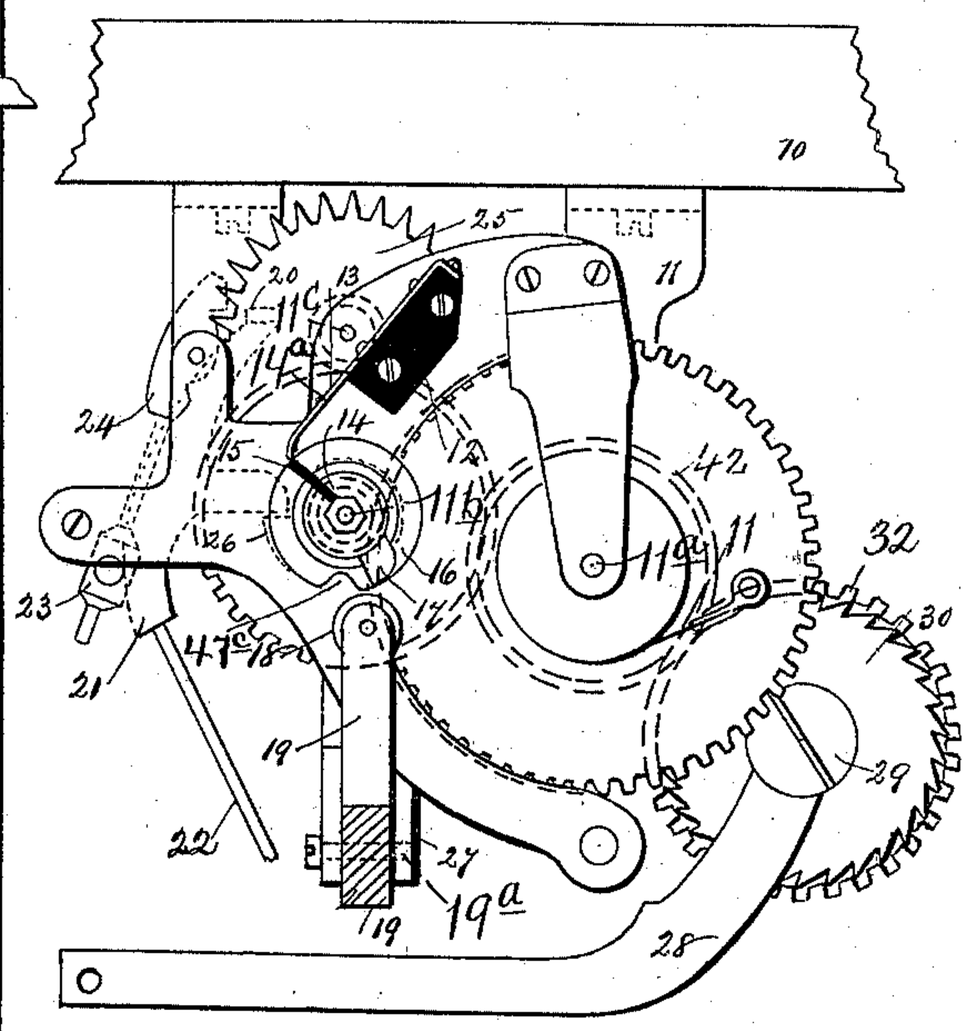
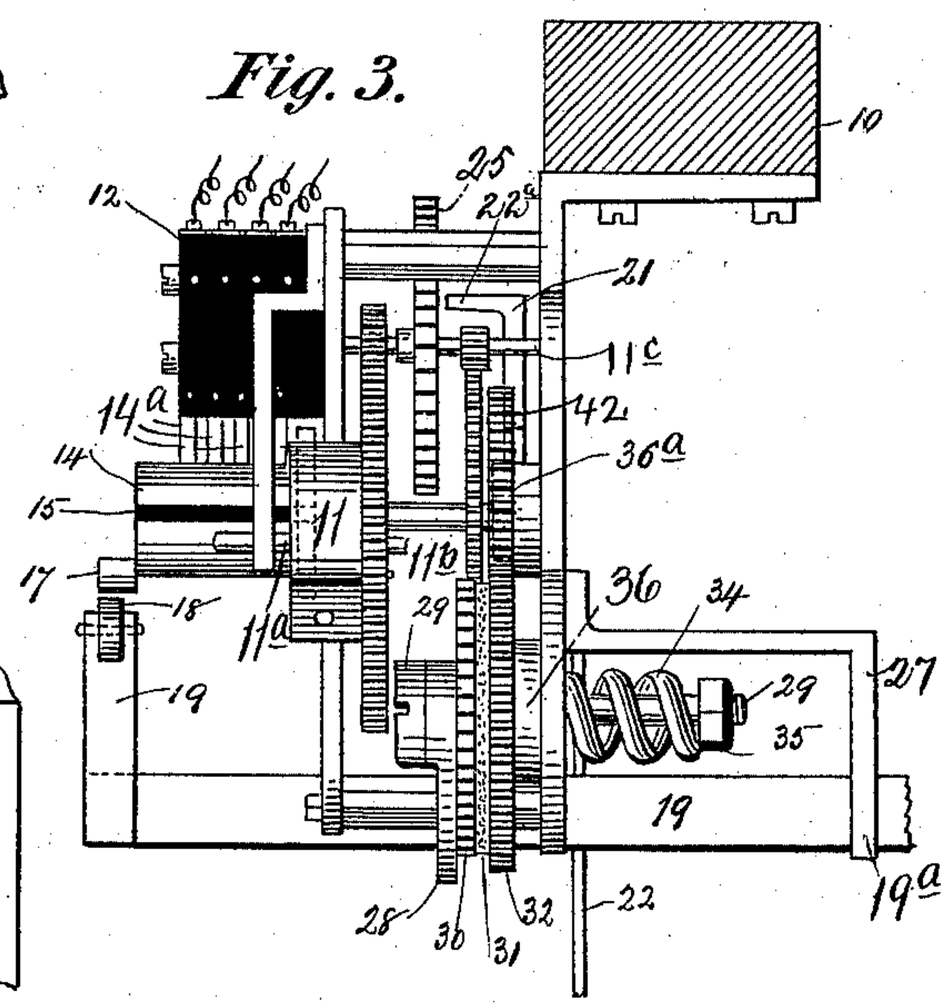


Fig. 3.



Witnesses
G. M. Anderson
Phil. C. Wasi.

Inventor
J. W. Dawson
By Attorney E. W. Anderson

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J. W. DAWSON.

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Fig. 4.

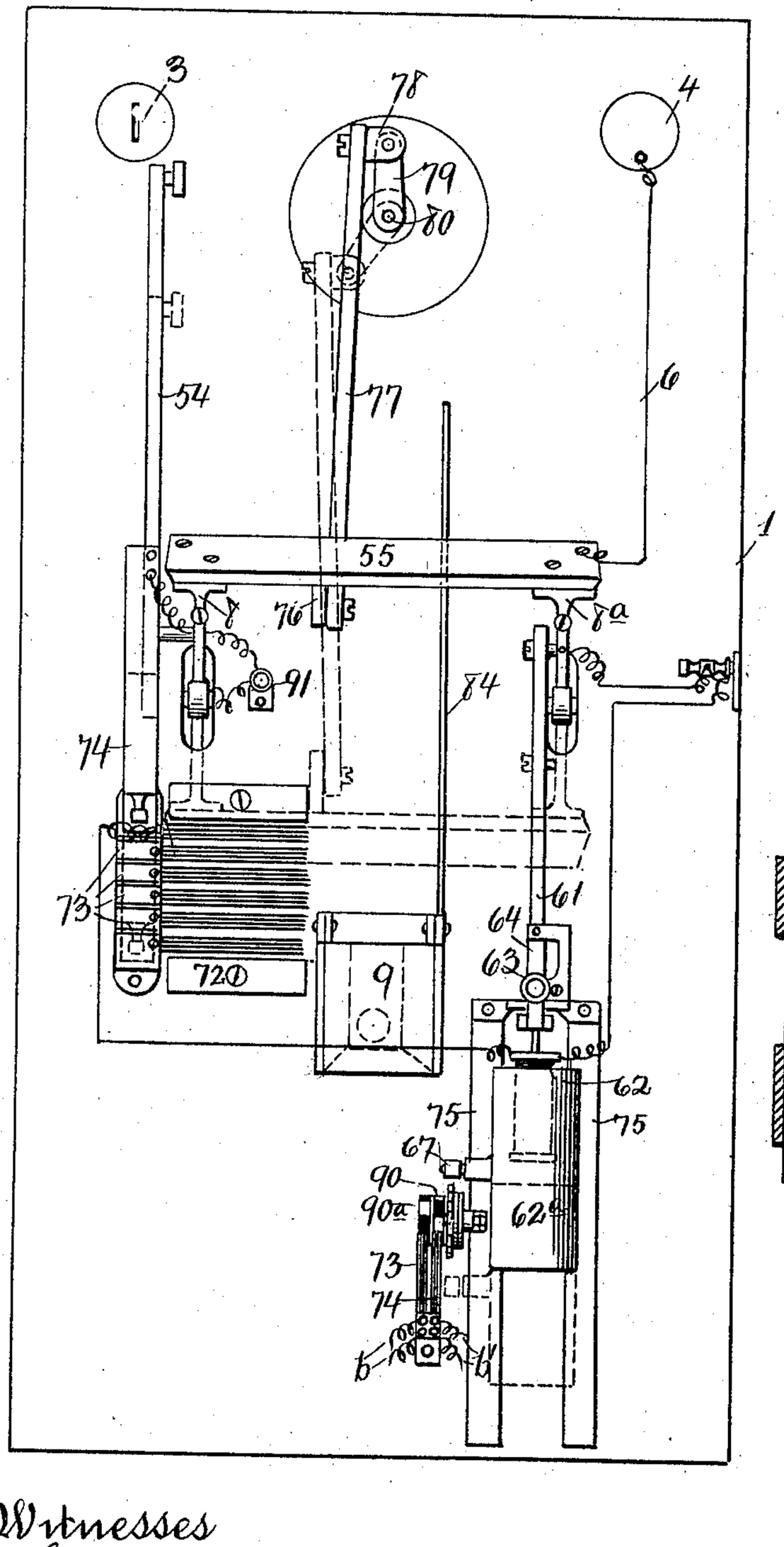
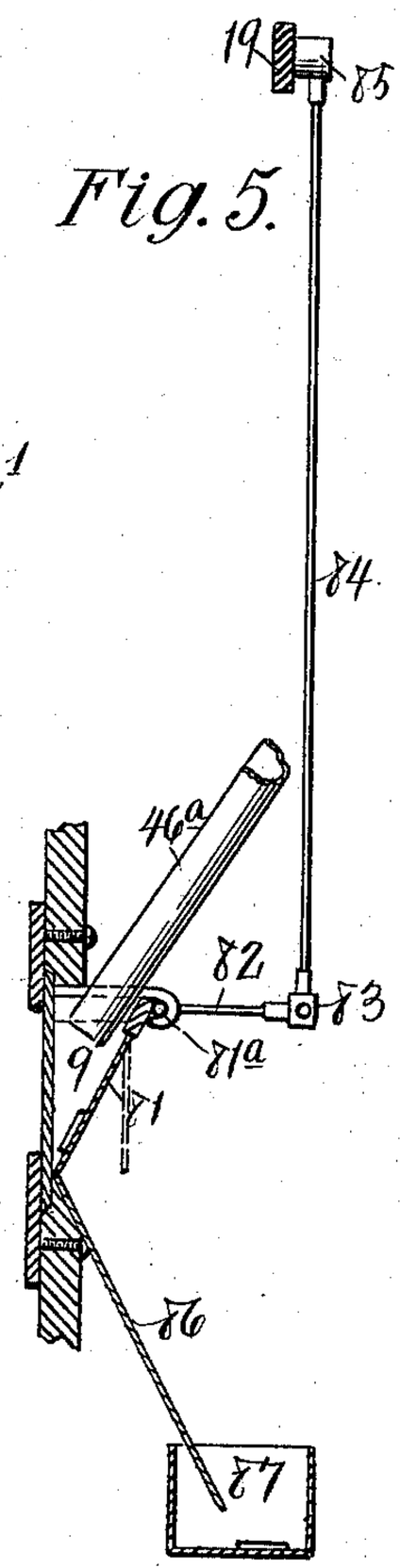


Fig. 5.



Witnesses
G. M. Anderson
Phil. C. Ellis.

Inventor
J. W. Dawson

By Attorney E. W. Anderson

(No Model.) 4 Sheets—Sheet 3.

J. W. DAWSON.

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Fig. 6.

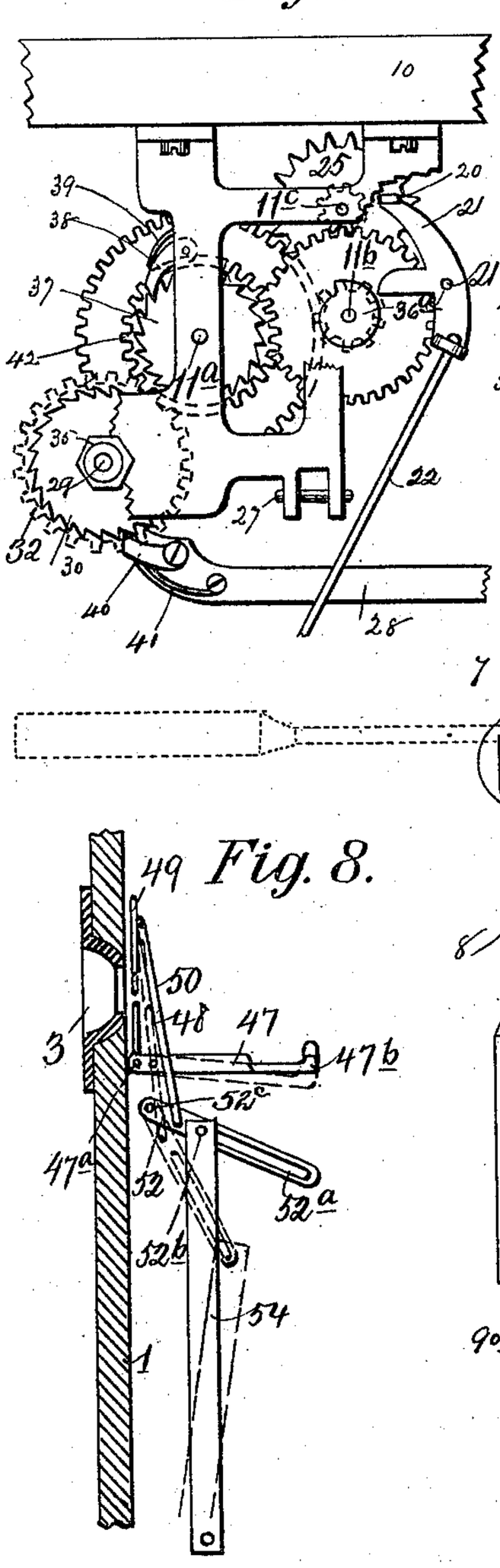

Fig. 7.

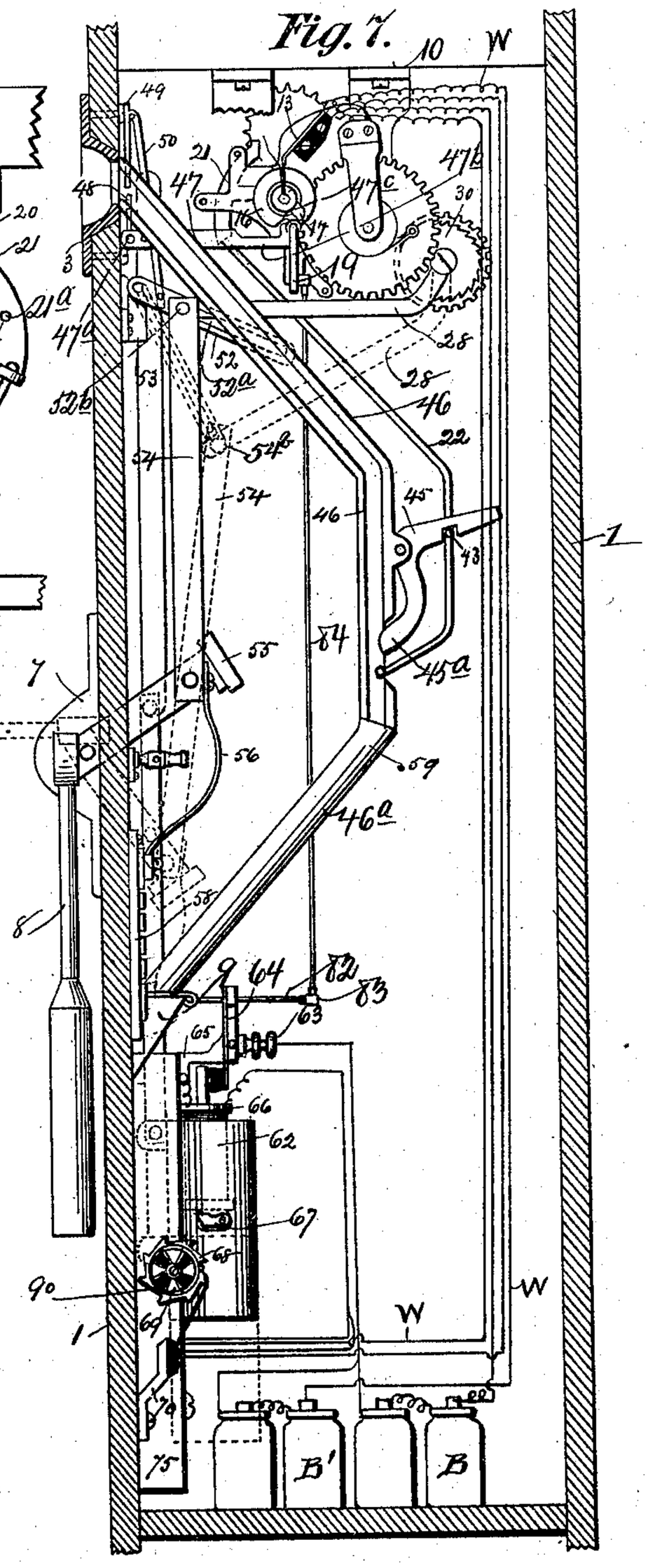

Fig. 8.

Witnesses
G. M. Anderson
Phil. C. Masi.

Inventor
J. W. Dawson
By Attorney E. W. Anderson

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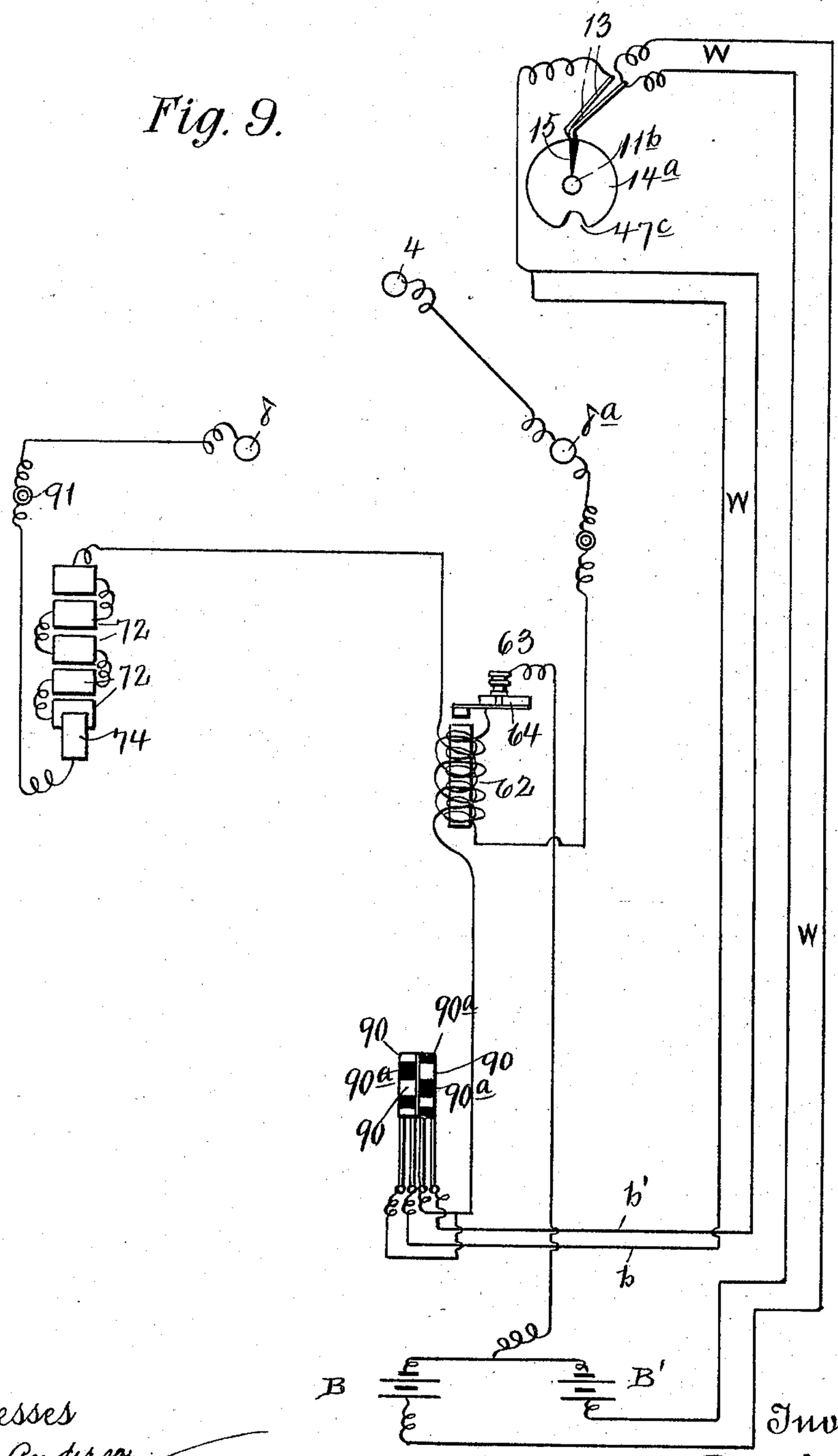
Fig. 9.



Witnesses
G. M. Anderson
Phill. E. Masi.

Inventor
J. W. Dawson

By Attorney G. M. Anderson

UNITED STATES PATENT OFFICE.

JOHN W. DAWSON, OF LOUISVILLE, KENTUCKY.

COIN-CONTROLLED MACHINE FOR AUTOMATICALLY DISTRIBUTING ELECTRIC CURRENTS.

SPECIFICATION forming part of Letters Patent No. 598,655, dated February 8, 1898.

Application filed November 18, 1896. Renewed December 23, 1897. Serial No. 663,262. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. DAWSON, a citizen of the United States, and a resident of Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Coin-Controlled Machines for the Automatic Distribution of Electrical Currents; 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, reference being had to the accompanying drawings, and to letters and figures of reference marked thereon, which form a part of this specification.

Figure 1 is a front elevation of a machine embodying the invention. Figs. 2 and 3 are respectively side and end views of the circuit-controlling mechanism and of the adjacent gear. Fig. 4 is an elevation of the front portion of the casing and of a portion of the mechanism carried thereby removed. Fig. 5 is a detail view, partly in section, of the devices for operating the coin-drop. Fig. 6 is a detail view of a portion of the gear. Fig. 7 is a vertical section on the line *x x* of Fig. 1. Fig. 8 is a detail view, partly in section, showing the devices which control the coin-slot. Fig. 9 is a diagrammatic view illustrating the circuits.

This invention relates to an electromechanical battery, commonly known as a "Faradic" or "physician's" battery, and is designed to provide mechanism whereby upon the deposit of a proper coin the automatic distribution of an electric current is effected.

With this object in view the invention consists in the novel construction and combination of parts, all as hereinafter described, and pointed out in the appended claims.

Referring to the accompanying drawings, the numeral 1 designates a suitable case or closure within which the operating mechanism is supported. 2 is a dial on the front of said case, and 2^a a hand or pointer which traverses said dial to indicate the strength of the current.

3 is the coin-inlet, which communicates with a rearwardly and downwardly inclined coin chute or race 46 46^a.

4 designates a hook on the front portion of the case, which is designed to support a removable electrode 5 for use in local applications.

7 and 7^a are two slotted bearing-plates in which are pivotally supported a pair of electrodes 8 8^a, having arms which extend through said plates within the case.

6 indicates the electrical connection between the electrodes 5 and 8^a.

9 is a receptacle into which the coin is conveyed by the chute 46 46^a and in which it remains in full view (said receptacle having a glass front) during the operation.

10 is a suitable support at the upper portion of the case 1 for clockwork, comprising a train of gear and an actuating-spring 11. The shaft 11^a, which carries said spring, is geared to a shaft 11^b, upon which is mounted a circuit-controlling device 14, consisting of a cylinder of conductive material having therein a short segment 15 of non-conductive material. This device is interposed in the battery-circuit through the electric connections (indicated at W) and the contact-springs 14^a. Said springs are affixed to a block 12, of insulating material, and bear upon the circuit-controlling device 14. When at rest, these springs are in contact with the non-conductor segment only, and the circuit is thereby broken. The shaft 11^b is geared to a third shaft 11^c, upon which is an escapement-wheel 25, engaged by a pallet 24.

23 is an adjustable weight device or pendulum which is attached to the pallet and acts to govern the speed and thereby the duration of the movement of the clock-train.

29 is a winding-shaft upon which is loosely mounted a gear-wheel 32, which engages a pinion 42 on the main spring-shaft 11^a.

30 is a ratchet-wheel which is fast on the shaft 29 and between which and the gear-wheel 32 is a friction-disk 31.

34 is a spring coiled around the shaft 29, one end of said spring being seated against an adjusting or tension nut 35 and the other end against a loose disk 36, which bears against the gear-wheel 32, and thereby causes a sufficient compression of the disk 31 to cause a frictional engagement between the said gear-wheel and the ratchet-wheel 30. (See Fig. 3.)

28 is a winding-lever which is fixed to the

shaft 29 and which is operated in the manner presently to be described.

37 is a ratchet-wheel on the main shaft 11^a. 38 is a pawl engaging the same, and 39 is a spring which presses upon said pawl.

40 is a pawl carried by the lever 28 and engaging the ratchet-wheel 30, and 41 is a spring bearing on said pawl.

21 22 is a trip-lever fulcrumed at 21^a and having at its upper end a projection 22^a, designed to engage a lateral pin or projection 20 on the escapement-wheel 25 when the latter is in proper position therefor. 36^a is a cam on the shaft 11^b, which holds said lever out of position to engage said projection until the proper time. The lower arm 22 of said trip-lever is extended downwardly in bent form, as indicated, and terminates within the coin-chute in position to be engaged by a coin passing therethrough. 45 is a locking-lever having a notch or recess which engages a pin or projection 43 on said arm 22, and thereby holds said lever from being operated to cause it to clear the projection 20 by jar or other accidental causes. The lower extremity 45^a of said lever enters the coin-chute at a point near the lower extremity of the arm 22, so that the coin operates thereon to release the engagement of said lever with the pin 43 and almost simultaneously operates upon said arm to free the engagement of the opposite arm 21 from said projection 20.

The lower extension 46^a of the coin-chute is of semicircular or trough form in order to throw the coin into flat position before it reaches the receptacle 9.

55 designates a non-conducting bar which rigidly connects the inner arms of the two electrodes 8 8^a and which has the movement indicated in dotted lines in Fig. 7 when the electrodes are raised.

49 is a slide which is arranged to close the opening 3, where the coin is inserted when said electrodes are raised. Said slide is actuated by the levers 50, 52, and 54. The lower end of the lever 54 is connected to the inner arm of the electrode 8, and its upper end has a sliding engagement with the lever 52 by means of a slot 52^a in the latter, which is engaged by a pin 52^b of the said lever. The fulcrum-point of this lever is at 52^c. The winding-lever 28, above referred to, is also connected to said lever 54 at 52^b, so that by working the electrodes up and down the spring is wound through the pawl and ratchet and friction-gear above described. When, however, the spring becomes wound to its full extent or nearly so, its resistance becomes greater than the friction of said gear, so that the gear-wheel 32 slips on the shaft 29 and the operator thereupon ceases working the handles.

48 is a second slide which is arranged to close the coin-opening 3 while the machine is in operation. This slide is pivotally connected at its lower end to an arm of a lever 47, fulcrumed at 47^a and having its free end 47^b in engagement with a cam 16 on the shaft 11^b. Said cam has a notch 47^c, and when the lever 47 is in engagement with this notch (which only occurs when the parts are at rest) the slide opens by gravity. At all other times the cam operates upon the said lever to elevate the arm thereof to which the slide 48 is attached and thereby raise the said slide into position to close said opening. The slide is guided in its movement by the walls of the slot in the coin-chute in which it works.

62 is an induction-coil whose primary is in circuit with one of the batteries B B′ and whose secondary includes in circuit the electrodes 8, 8^a, and 4 and a group of resistance-coils 72.

63, 64, and 65 indicate the several parts of an ordinary vibrator or make-and-brake device in connection with said coil and in the primary circuit for the purpose of setting up the induced current.

62^a designates a cylinder which surrounds the induction-coil and is fitted to move vertically in suitable guides 75, being actuated by a pitman connection 61 with the inner arm of the electrodes 8^a. Said cylinder carries a pawl device 67, which as the cylinder moves upwardly is designed to engage the teeth of and rotate a ratchet-wheel 68, to which is affixed a battery-changer 69. This battery-changer consists of two independent disks, each of which is made up of alternating segments of conducting and non-conducting material 90 and 90^a, a conducting-segment of one disk being opposite a non-conducting segment of the other disk, and vice versa.

73 and 74 designate two brushes or contacts which are in engagement with the respective disks. These brushes are respectively connected with the batteries B and B′, (connections b and b',) and they are both connected with the primary of the induction-coil.

The resistance-coils 72, above referred to, are of ordinary character and are connected to a series of contacts 73 in such a manner that a conductor moving upward over the contacts is continually cutting more and more coils out of the circuit. 74 designates a contact of this character which is connected to the inner arm of the electrode 8. It will be obvious, therefore, that as the electrodes are raised from their lowest to their highest position the current thereto is constantly increased owing to the successive cutting out of the said coils.

The bottom portion 81 of the coin-receptacle 9 is hinged at 81^a and is capable of being moved back to allow the escape of the coin, which thereupon passes down a chute or race 86 into a second receptacle 87. It is desired that the coin shall remain in the receptacle 9 during the operation, and it becomes necessary to provide means which shall operate to open the said bottom portion 81 at the time the operation ceases. To this end I provide the circuit controller or breaker 14 with a

projection 17, which is arranged to come in contact with a lever 19 at the time the circuit is broken by said device. This lever is fulcrumed at 19ª in a bracket 27, and the movement thereof when actuated by the said projection 17 is made operative to move the said bottom portion 81 by suitable connections—such, for instance, as shown at 82, 83, 84, and 85 in Fig. 5. The return movement of the part 81 and of the connections after the coin has escaped from the receptacle 9 is caused by gravity.

To operate the indicator 2ª on the dial 2, I connect to a bracket 76 on the bar 55, which connects the two electrodes 8 8ª, one end portion of a link-bar 77, whose opposite end portion is jointed at 78 to an arm 79 on the shaft 80, which carries said indicator.

Inasmuch as the strength of the current at the electrodes is dependent upon the position or degree of elevation of the same, as above described, and consequently of the bar 55, it will be obvious that such strength can be correctly indicated by the means above described and a proper marking of the dial.

The operation is as follows, attention being called to the fact that under normal conditions the electrodes have no connection with the clockwork, except for the purpose of winding the same, and may be worked up and down without otherwise affecting the gear: When the electrodes are in their normal or down position, the coin-opening 3 is exposed for the reception of the coin. The coin, being inserted, falls through the chute 46 46ª into visible position in the receptacle 9 and in its passage releases the locking-lever 45 and the trip-lever 21 22. The release of said trip-lever starts the gear into operation, establishes the primary or battery circuit, and also sets up the induced or secondary current. The electrodes are now grasped and are raised until the desired strength of current is obtained. The purpose of the slide 49 will now be appreciated, as it will be obvious that without the same the electrodes might be raised before the coin was inserted and the operator might receive too great a current. The purpose of the slide 48, which also controls the coin-opening, is to prevent the deposit of a second coin before the operation caused by the preceding one is completed. To illustrate, suppose a clock-train be set to run, say, for one minute and the person using the machine only uses it for a half-minute. A second person who should during the remaining half-minute deposit a coin would get only current for the unexpired portion of the time given to the first person. This is prevented by the provision of the slide 48. The weight 23, attached to the pallet 24, acts in the nature of a pendulum, and by varying the position of the weight the time in which the current-breaker 14 shall make a complete rotation may be lengthened or shortened. As soon as this device 14 has completed its revolution the primary circuit is broken, the lever comes into engagement with the stop 20 of the escapement, which checks the movement of the gear, and the parts remain inoperative until another coin is inserted. As the electrodes are dropped the battery-controller 62 is raised, and the pawl 67, which has ridden freely down by the ratchet-wheel 68, engages the wheel 68 and rotates it sufficiently to change the relative position of the two disks 69 with respect to their brushes or contacts, whereby the battery which was in circuit is thrown out of circuit, and the other battery, which was idle during the preceding operation, is thrown into circuit. A fresh battery is therefore provided for each operation.

I do not desire to limit myself to the exact construction and arrangement of parts herein shown and described, and it is obvious that the same may be varied without departing from the spirit and scope of the invention.

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

1. In mechanism of the character described, the combination of a primary circuit, including a source or generator of electricity, a secondary circuit inductively related to the primary circuit and normally open, pivoted electrodes in said secondary circuit, a group of resistance-coils, their contact-plates, and a contact device arranged to traverse said plates and operatively connected with one of said electrodes, a circuit-controlling device, a motor and gear for operating said device, means for normally locking said gear with the circuit broken, a coin-chute, means whereby a coin in passing through the said chute releases the said lock, a slide arranged to control the entrance to said chute, connections between the electrodes and the said slide whereby it is operated to close said entrance when the electrodes are raised, a second slide also arranged to control said entrance, and operative connections between said second slide and the circuit-controlling device, substantially as specified.

2. In mechanism of the character described, the combination with the operating-gear and spring, of the friction winding-gear therefor, a pivoted electrode, and connections whereby the movement of said electrode operates said winding-gear, substantially as specified.

3. In mechanism of character described, the combination with the operating-gear and spring, of the friction winding-gear, the pair of pivoted electrodes, operative connections between said electrodes and the shaft, and means whereby said friction-gear is rendered inoperative when the spring is wound to a predetermined point, substantially as specified.

4. In mechanism of the character described, the combination with the gear which controls the operation of the circuit-breaker, and the actuating-spring for said gear, of a shaft having a loose gear-wheel which engages a pinion on the spring-shaft, a ratchet-wheel fixed on said shaft, a friction-disk interposed be-

tween said gear and ratchet wheels, a tension device acting upon said gear-wheel to regulate its pressure upon said friction-disk, a lever fixed to said shaft, a pawl carried by said lever and engaging the ratchet-wheel, a pivoted electrode and connections between said electrode and said lever, substantially as specified.

5. In mechanism of the class described, the combination with the case having the coin-chute therein, and the opening leading into said chute, of a slide arranged to close said opening, a pivoted electrode and the levers 50, 52 and 54, forming an operative connection between said electrode and the slide, whereby the latter is closed when the electrode is raised, substantially as specified.

6. In mechanism of the class described, the combination with the circuit-breaker, its actuating-spring and gear therefor, of a coin-chute, a slide arranged to control the entrance to said chute, a cam device operating in connection with said circuit-breaker, and connections whereby said cam operates during the movement of said breaker to maintain said slide in position to close said opening substantially as specified.

7. In mechanism of the class described, the combination with the rotary circuit-controlling device, its actuating-spring and gear-train, of a coin-chute, a trip-lever having an arm which extends into the said chute and whose opposite arm has a stop arranged to engage one wheel of the said train, a pivoted locking-lever 45 which engages the said trip-lever and also projects into the coin-chute, and a cam device carried by the said gear-train and arranged to engage the said trip-lever, substantially as specified.

8. In mechanism of the class described, the combination with the coin-chute having the receptacle 9 at its lower end, said receptacle having an inclined bottom portion 81 hinged or pivoted at its upper end portion, of the lever 19, connections between said lever and the said bottom portion 81, and the rotary circuit-breaker having a projection 17 arranged to contact with and operate said lever at about the time the circuit is broken, substantially as specified.

9. In mechanism of the class described, the combination with movable electrodes, and with a pair of batteries, of a battery-changing device connected to and operated by the electrode, whereby said batteries are alternately thrown into and out of circuit, substantially as specified.

10. In mechanism of the class described, the combination with a movable electrode, and a reciprocating device connected to and actuated by said electrode, of a pair of batteries and a battery-changer operated by the reciprocating device, substantially as specified.

11. In mechanism of the class described, the combination with a movable electrode, a reciprocating device operatively connected thereto and carrying a pawl, a ratchet-wheel in position to be engaged by said pawl a pair of commutator-disks actuated by said ratchet-wheel and whose conductive segments alternate with each other, a pair of batteries, and a pair of contact devices in circuit with said batteries and in contact with the respective commutator-disks, substantially as specified.

12. In mechanism of the class described, the combination of a source of electricity, a primary circuit, a circuit-breaking device therein, a train of gear and driving-spring for actuating said circuit-breaking device, a coin-operated lock for said gear, a secondary circuit, an induction-coil in said primary and secondary circuits, a make-and-break device, resistance-coils also in said secondary circuit, a series of contact-plates to which said coils are connected, a movable electrode, and a contact-arm connected to said electrode and arranged to traverse the series of contact-plates, said arm forming a part of the secondary circuit, substantially as specified.

13. In mechanism of the class described, the combination of a pair of movable electrodes, means for supplying a current of electricity to said electrodes, means controlled by the position of said electrodes for regulating the strength of such supply, and means operated by the movement of said electrodes for changing the source of current-supply, substantially as specified.

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

JOHN W. DAWSON.

Witnesses:

JOSEPH MEYRICK, Jr.,

T. E. GROVE.