(No Model.) 7 Sheets—Sheet 1.

J. S. WALLACE.

COIN OPERATED ELECTRIC APPARATUS.

No. 423,361. Patented Mar. 11, 1890.

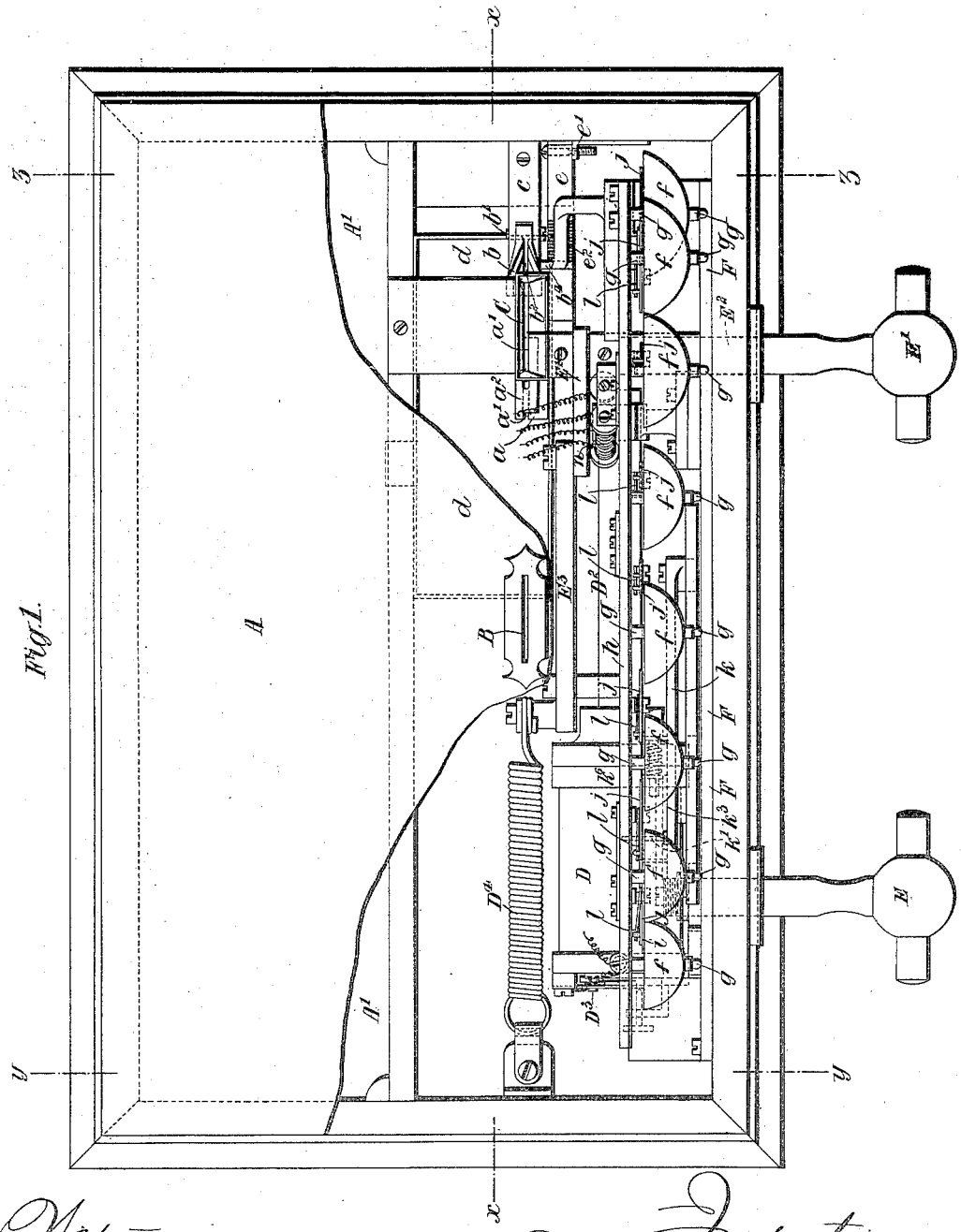

Fig. 1.

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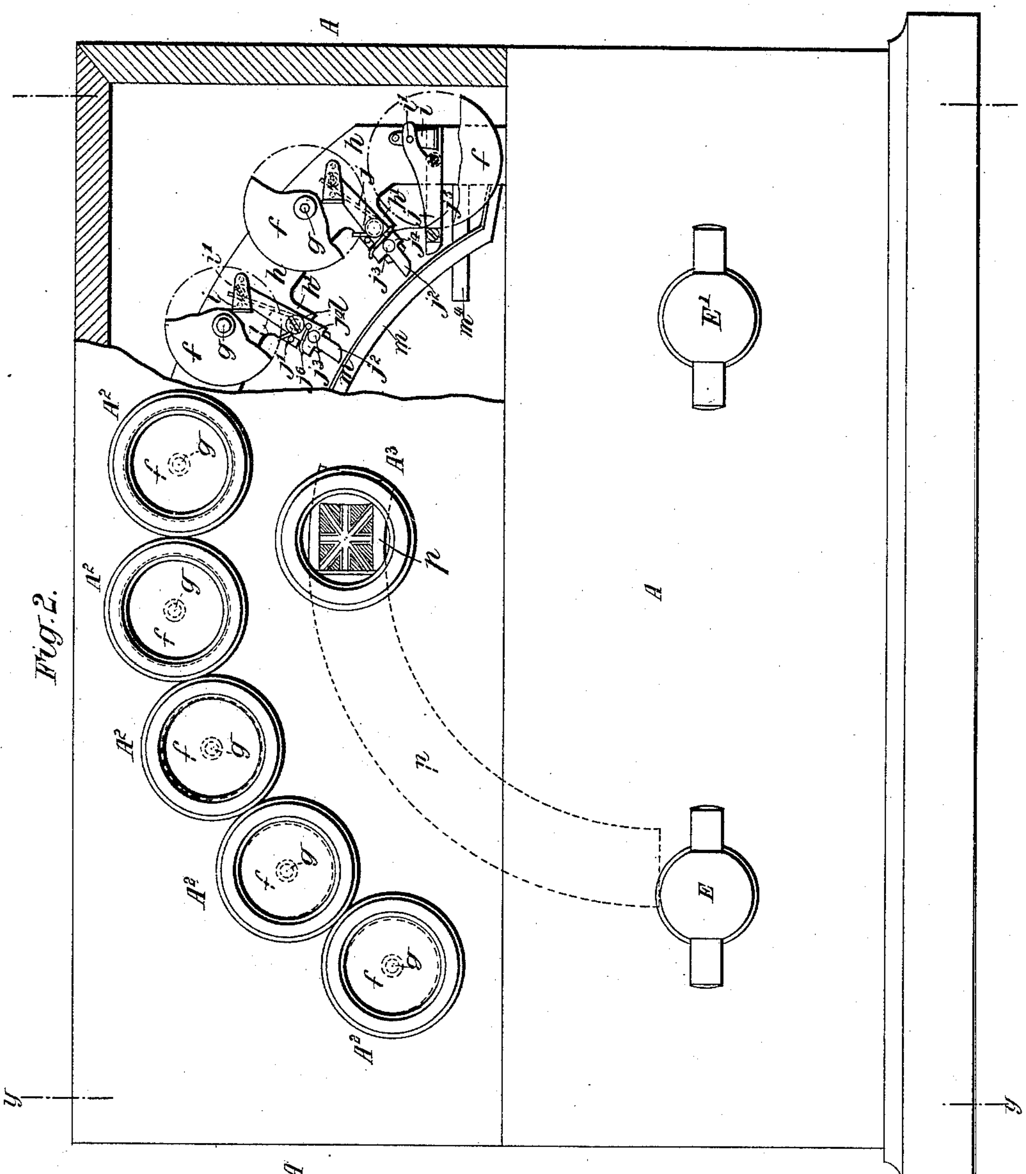

Fig. 2.

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(No Model.) 7 Sheets—Sheet 3.

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Fig. 3.

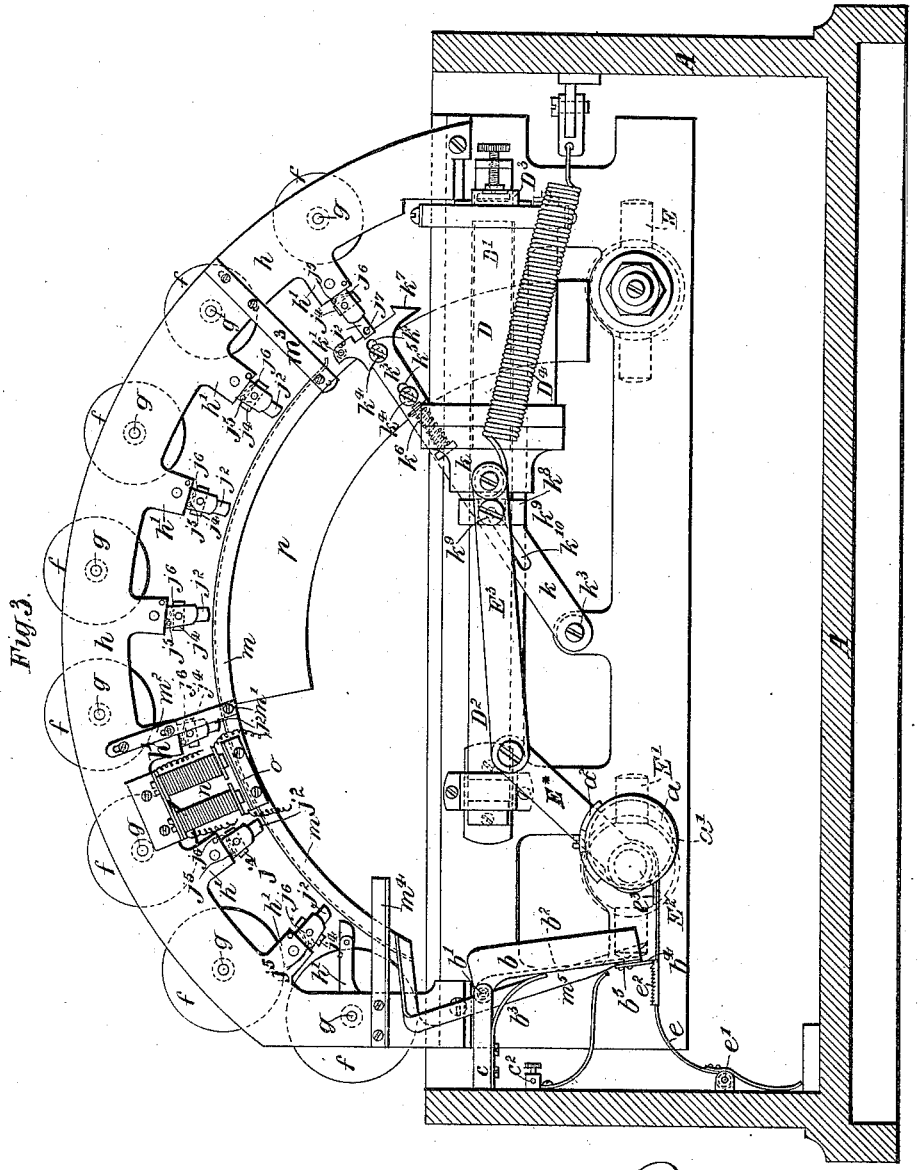

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Fig. 4.

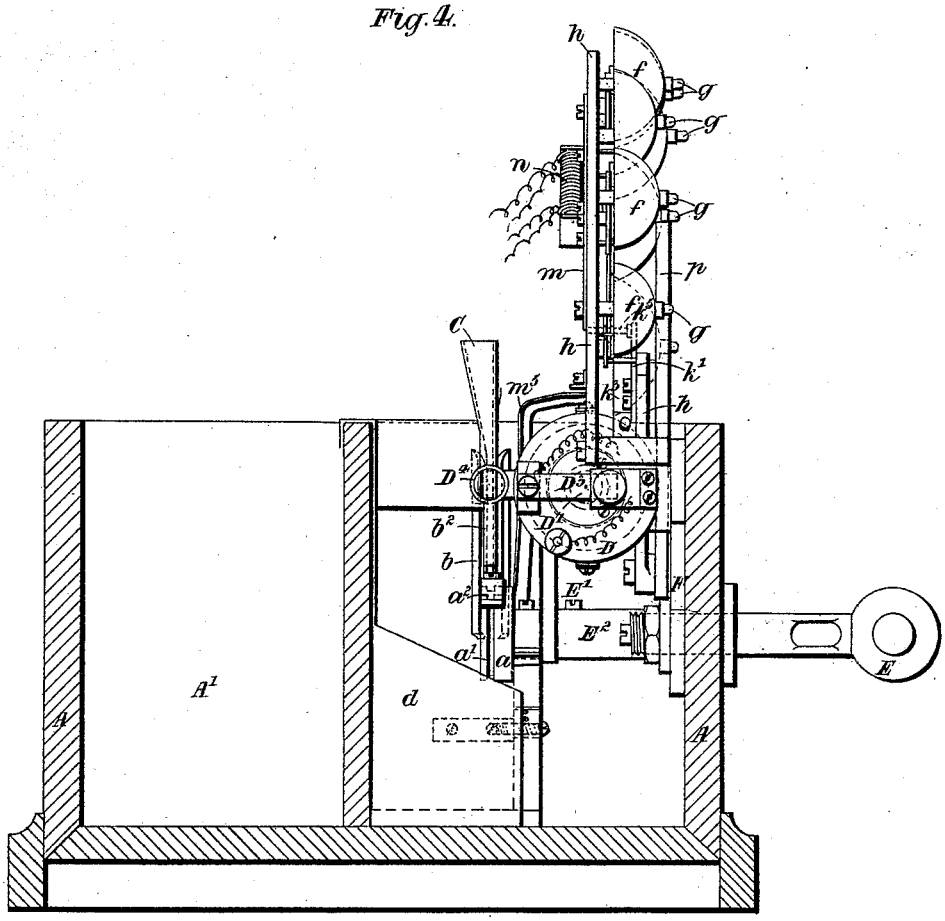

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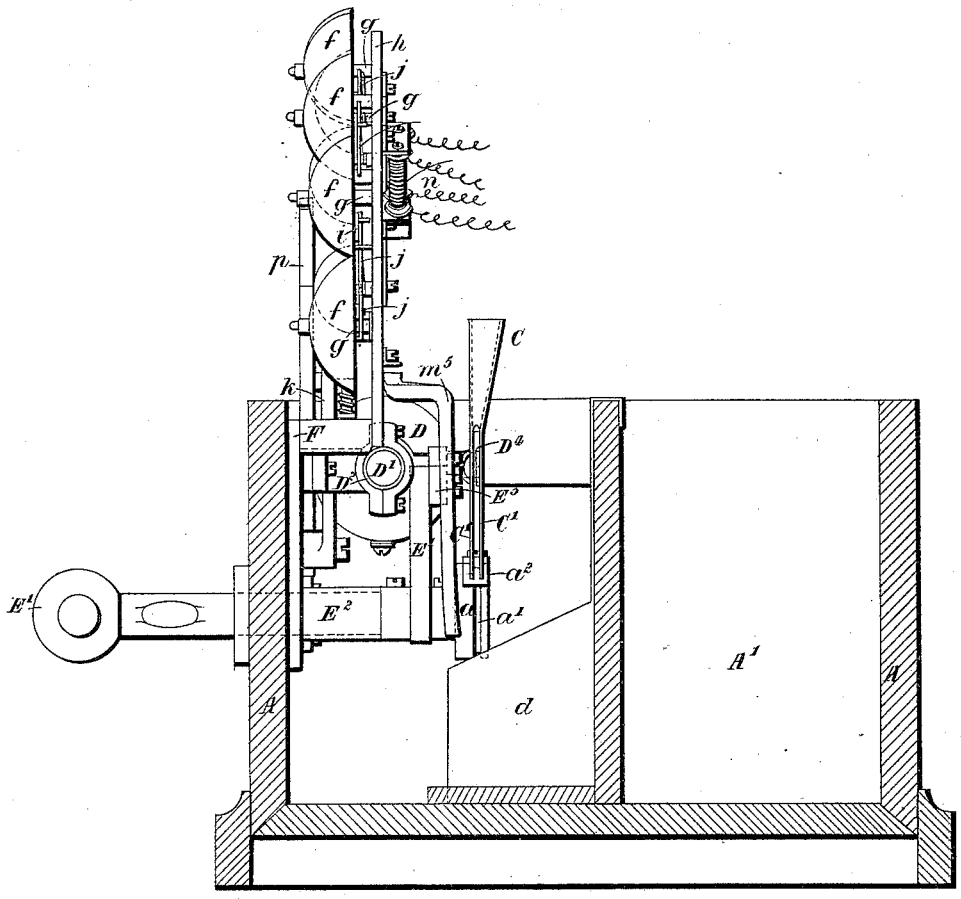
Fig. 5.



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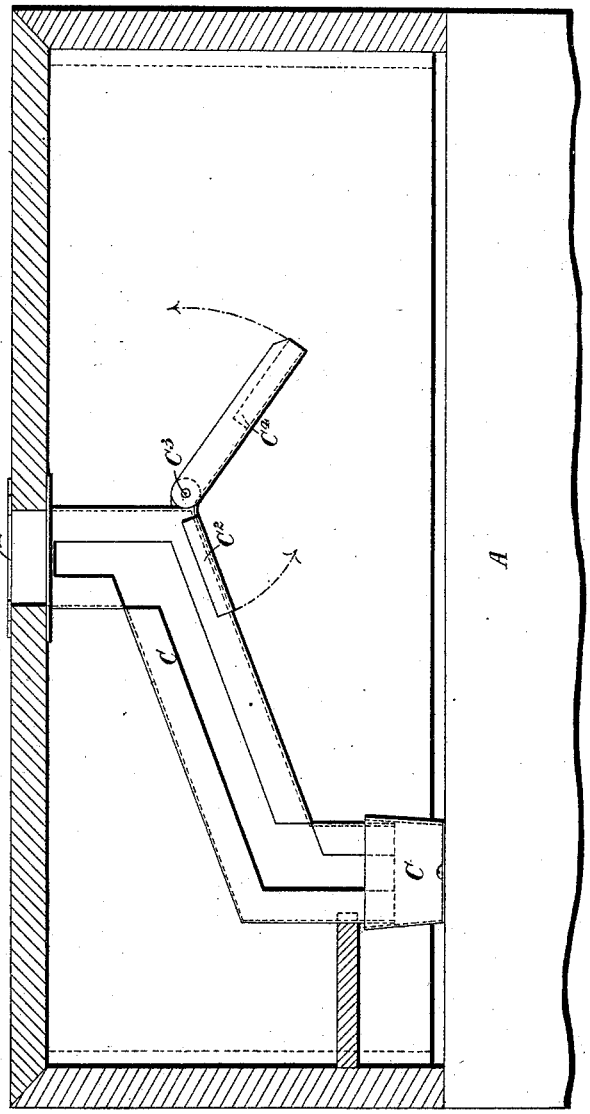
COIN OPERATED ELECTRIC APPARATUS.

No. 423,361. Patented Mar. 11, 1890.

Fig. 6



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(No Model.) 7 Sheets—Sheet 7.

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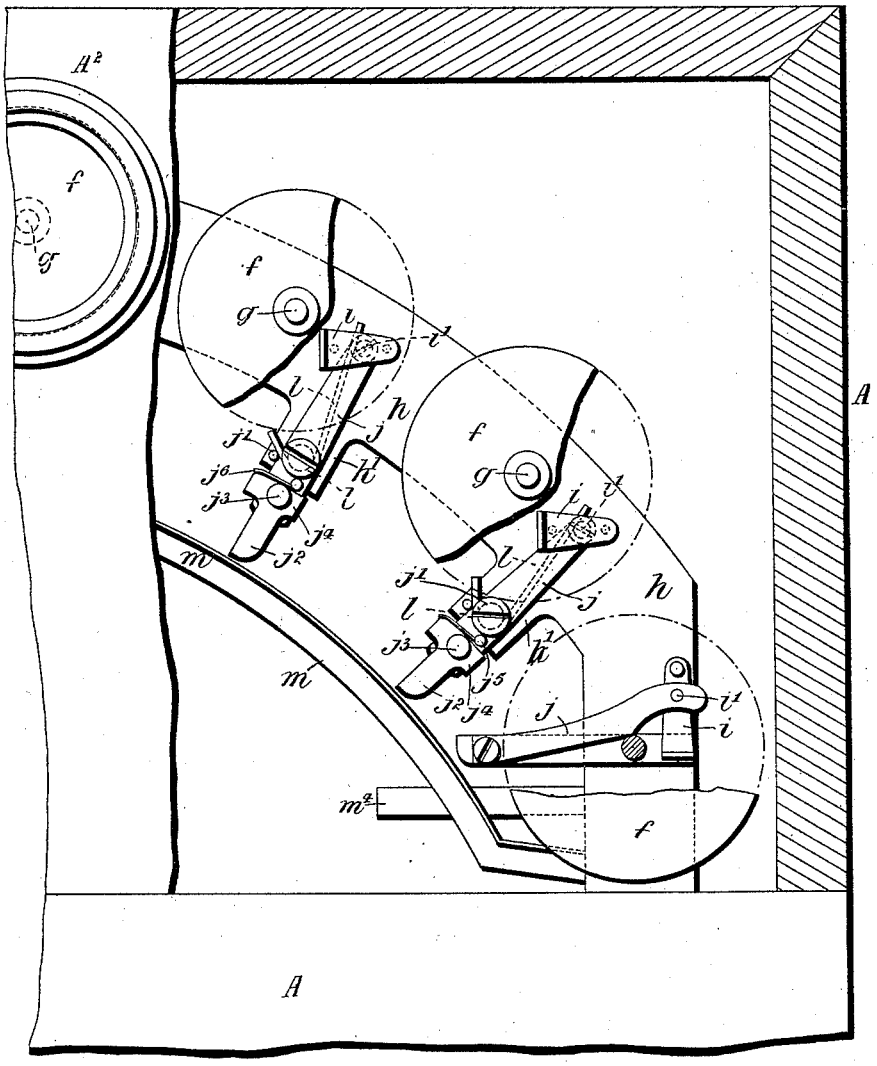
COIN OPERATED ELECTRIC APPARATUS.

No. 423,361. Patented Mar. 11, 1890.

Fig. 7.



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UNITED STATES PATENT OFFICE.

JOHN STEWART WALLACE, OF BELFAST, IRELAND.

COIN-OPERATED ELECTRIC APPARATUS.

SPECIFICATION forming part of Letters Patent No. 423,361, dated March 11, 1890.

Application filed August 29, 1889. Serial No. 322,389. (No model.)

To all whom it may concern:

Be it known that I, JOHN STEWART WALLACE, timber merchant, a subject of the Queen of Great Britain, and a resident of Belfast, Ireland, have invented certain new and useful Improvements in Apparatus for Receiving Payments and Permitting the Administration of Electricity in Exchange Therefor, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to apparatus for administering or transmitting electricity after the deposit in the said apparatus of a coin or coins.

An important feature of my said invention is the construction of the apparatus in such a manner that although the various parts may be operated by the turning of a handle a coin must be inserted before the electric current can be completed and electricity administered.

In the accompanying drawings I have shown how my said invention may be conveniently and advantageously carried into practice.

Figure 1 is a plan, part of the upper portion of the box or case being removed, and Fig. 2 is a front elevation, partly in section, showing one form or modification of my improved apparatus. Fig. 3 is a vertical longitudinal section on the line *x x*, Fig. 1. Fig. 4 is a transverse section on the line *y y*, Figs. 1 and 2. Fig. 5 is a transverse section on the line *z z*, Figs. 1 and 2. Fig. 6 is a vertical longitudinal section, showing a detail of construction hereinafter described. Fig. 7 shows an enlarged detail view of the bell mechanism.

Like letters indicate corresponding parts throughout the drawings.

A is the box or case of the apparatus.

A′ is a compartment provided in the said box or case and intended to contain the cells of the battery.

B is the slot or slit for the insertion of coins into the said apparatus.

C is the coin-chute.

D is the induction or intensity coil.

E E′ are the external handles (one of which is movable) for operating the apparatus, as hereinafter described.

F is a frame carrying the mechanism and secured to the box or case A.

The induction or intensity coil D is preferably provided with a fixed iron core D′, having a brass tube D^2 arranged to slide over the latter. One end of the said brass tube D^2 projects outside the said induction or intensity coil and is coupled by means of a connecting-rod E^3 to a crank E^*, provided upon the stem E^2 of the handle E′, which is arranged to rotate freely in a suitable bearing provided in the frame F, so that on the said handle being moved the brass tube D^2 is caused to uncover more or less the said iron core D′, and thus increase or diminish the strength of the secondary currents.

D^3 is a suitable contact-breaker.

D^4 is a spring for causing the tube D^2 and the handle E′ to resume their normal position after each operation of the apparatus. The handles E E′ are placed in the secondary circuit of the induction or intensity coil D. There is, however, a break or gap in the primary circuit which prevents the administration of electricity by the apparatus until a coin is inserted. On a coin or coins being dropped into the apparatus, the said break or gap can be filled up by turning the handle E′, and the primary circuit being thereby completed, the apparatus is set to work when the handle is turned and currents are produced in the secondary wire-circuit.

Provision is made for removing the coin when desired, or after a given period, so as to again break the primary circuit and stop the working of the apparatus. For this purpose the lower extremity of the coin-chute C is formed with guide-pieces C′, adapted to retain a coin of the requisite dimensions edgewise between a cam or eccentric *a*, fixed in any suitable manner upon the extremity of the stem E^2 of the movable handle E′, and a piece *b*, hinged or pivoted at *b′* to a suitable bracket *c*, secured to the box or case A. The cam or eccentric *a* and pivoted piece *b* are provided, respectively, with grooves *a′* and b^2, so as to retain the said coin edgewise between them.

a^2 is an adjustable piece adapted to cause the said coin to be discharged from the grooves *a′* and b^2 and drop into a suitable receptacle *d*, provided in the bottom of the box or case A, when the handle E′ has been rotated to the full or any other predetermined extent of its

motion, so as to uncover the whole or any other desired portion of the core D′, and thus administer the strongest current of which the apparatus is capable or which it may be desired to transmit.

b^3 is a spring which tends to press the said pivoted piece b against the coin, and thus retain the latter in the grooves a' and b^2.

c' is a contact-spring which is connected to the primary circuit. Upon turning the handle E′, and thus also rotating the cam or eccentric a, so as to press the coin against the pivoted piece b, the primary circuit is completed by the contact between the said pivoted piece b and the contact-spring c'.

c^2 is a binding-post or terminal provided upon the above-mentioned contact-spring c', for electrically connecting the said primary wire or conductor therewith. When the said handle E′ has been turned a certain distance, the adjustable stop or piece a^2 forces the said coin to fall from the grooves a' and b^2 and drop into the receptacle d.

In order to provide with certainty for releasing the coin when the said handle E′ has been rotated, so as to form contact between the pivoted piece b and the contact-spring c', and to uncover the core D′ of the induction or intensity coil D to a greater or less extent, (but is not turned sufficiently far to bring the stop or piece a^2 into operation,) and is returned to its original position, and to obviate any possibility of the sticking of the said coin in the grooves a' b^2 when the said handle has been turned to its full extent, I provide a spring-piece e, secured to suitable brackets e', attached to the box or case A. Upon this spring-piece are provided teeth e^2, with one or the other of which is adapted to engage a knife-edge b^4, provided upon the lower extremity of the pivoted piece b, when the latter is moved by the pressure of the coin on the turning of the cam or eccentric a. When the said handle E′ is returned to its original position by the action of the spring D^4, and the cam or eccentric a is moved into such a position that its cut-away portion is brought opposite the said pivoted piece b, the latter is retained by the said tooth e^2, and the coin is thus permitted to drop from the grooves a' b^2 into the receptacle d. In the action of falling the said coin hits or strikes against the projecting extremity of the said spring-piece e with sufficient force to depress the latter and release the knife-edge b^4 from the tooth e^2, thus permitting the pivoted piece b to resume its normal position under the action of the spring b^3.

e^3 is a piece of insulating material provided upon the extremity of the spring-piece e, and b^5 is a piece of insulating material upon the rear of the knife-edge b^4.

f f are a peal of bells, which I sometimes provide for indicating to the person operating the apparatus the amount of the central core D′ of the induction or intensity coil D uncovered, and therefore the strength of the current transmitted as the handle E′ is turned, each bell being rung in succession for this purpose, in the manner hereinafter described. The said bells f are supported upon stems g, secured to a circular or arc shaped piece h, supported in any suitable manner upon the frame F, and are provided with hammers or clappers i, which are pivoted loosely at i', Fig. 2, to the upper extremities of levers j, pivoted at j' to extensions h' upon the said circular or arc shaped piece h. The lower extremities of the said levers j are provided with catch-pieces j^2, with which is adapted to engage a pin or projection k', Fig. 3, provided upon the upper extremity of an arm or lever k, pivoted at k^2 to the box or case A and arranged to be actuated upon turning the handle E′, in the manner hereinafter described.

The catch-pieces j^2 are pivoted at j^3 to the lower extremities of the levers j in such a manner that when the handle E′ is operated, so as to increase the supply of electricity, the said pin or projection k' upon the extremity of the arm or lever k will operate them, so as to ring or sound the bells f successively, one after the other; but on the return of the said handle to its normal position the said bells will not be rung or sounded thereby. For this purpose the said catch-pieces j^2 are provided with extensions j^4, adapted to bear against pins or studs j^5, and thus render the said catch-pieces operative when struck in one direction, but permit them to turn upon their pivots j^3 when struck in the other, and thus remain inoperative.

j^6 are springs for retaining the said catch-pieces j^2 normally in position, bearing against the said studs or pins j^5.

l l are springs adapted to be compressed when the levers j are moved and which operate to forcibly return the said levers to their normal positions and cause the hammers or clappers i to strike against and ring or sound the said bells f. The catch-piece j^2 of the first bell f, or that nearest to the induction or intensity coil D, is provided with a pin or extension j^7, Fig. 3, for the purpose hereinafter described, and the said catch-piece and spring l are dispensed with upon the extremity of the lever j of the last bell f, or that farthest from the said induction or intensity coil.

A^2 A^2 are windows provided in the box or case A, through which the said bells f can be seen from the exterior by the person operating the apparatus. A^3 is a similar window, at which I provide for exhibiting successively representations of different flags or other matter during the operation of the said apparatus, as hereinafter described.

The pin or projection k' is attached to a plate k^3, provided upon the upper extremity of the arm or lever k and secured thereon by means of set-screws k^4, which pass through slots k^5 in the said plate k^3. The said slots k^5 are formed of such a length that the plate k^3 has a certain amount of endwise play or mo-

tion, and can be thus caused to rise or fall upon the arm or lever k.

k^6 is a spring which normally retains the said plate k^3 in its highest position. The said pin or projection k' is adapted to strike against the lower extremities of the catches j^2, and thus move the levers j, so as to compress the springs l and cause the hammers or clappers i to strike against and sound or ring the bells f when the mechanism is operated, as hereinbefore mentioned.

k^7 is a hook adapted to engage with the pin or projection j^7 upon the catch j^2 of the first bell f.

The arm or lever k is connected to a collar k^8, provided upon the tube D^2 by means of a set-screw k^9, passing through a slot k^{10} in the arm or lever k, so that when the said tube D^2 is moved by turning the handle E′ the said arm or lever k will be moved at the same time.

To prevent the bells f from being rung or sounded, should the handle E′ be turned without a coin of the requisite value having been previously inserted into the apparatus, I provide a circular or arc shaped guide m, pivoted at m' to a bracket m^2, attached to the circular or arc shaped piece h.

m^3 is a guide or support for steadying the movement of the circular or arc shaped guide m, and m^4 is a stop-piece for limiting the movement of the said circular or arc shaped guide m. The extremity of the said circular or arc shaped guide m is slightly turned upward, so that should an attempt be made to operate the apparatus without inserting a coin of the proper value therein, by turning the handle E′ the pin or projection k' will pass underneath the circular or arc shaped guide m and the plate k^3 be lowered by the compression of the spring k^6, so that the bells f will not be sounded or rung.

To permit the ringing or sounding of the said bells when a coin of the proper value has been inserted into the apparatus, I provide upon the circular or arc shaped piece h an electro-magnet n, the armature o of which is fixed to the guide m. The electro-magnet n is coupled up in the primary circuit, so that upon the insertion of a coin of the proper value into the apparatus, and the completion of the said primary circuit, by turning the handle E′, as hereinbefore described, the said armature o will be attracted to the poles of the electro-magnet n, and will thus pivot or move the guide m into such a position that upon operating the handle E′ the pin or projection k' will pass above the said circular or arc shaped guide m and successively ring or sound the bells f. The circular or arc shaped guide m is so arranged that when the coin is forced or drops out from the grooves a' b^2 and the primary circuit is broken or interrupted by the return of the handle E′ and the pivoted piece b to their normal positions the said circular or arc shaped guide will by reason of its weight also return to its normal position. To obviate, however, any chance of the said circular or arc shaped guide m remaining in its highest position after the said primary circuit has been broken or interrupted, I provide upon one extremity thereof an extension m^5, against which is adapted to bear the knife-edge b^4 upon the return movement of the pivoted piece b, thus insuring the return of the said circular or arc shaped guide to its normal position. In order to combine strength and lightness, I prefer to form the said guide m L-shaped in transverse section.

p is a quadrant or arc secured to the arm or lever k, and having thereon representations of the flags of different nations or other suitable matter, which are successively exhibited at the window A^3 when the handle E′ is turned. In some instances each of the said flags is provided with a distinctive figure, number, or other sign intended to indicate the strength of the current that is induced as the said handle E′ is turned, and the core D′ of the induction or intensity coil D is gradually uncovered.

The side of the box or case A, carrying the frame F, supporting the mechanism, is preferably formed removable, so that the said mechanism can be easily and expeditiously taken out for inspection or repairs, and the upper portion of the said box or case is hinged to the lower portion thereof, and is arranged to open for a like purpose, the coin-chute being formed in two parts to permit of this operation. By opening the upper part of the said box or case access can be had, moreover, to the money-receptacle d. A lock or locks are provided for preventing the unauthorized opening of the said box or case.

Fig. 6 illustrates a device which I provide for preventing fraud by the insertion of disks of the requisite dimensions, but formed of lead or other heavy metal. C^2 is a piece pivoted at C^3 to the coin-chute C and provided with a weighted arm or extension C^4. The said piece C^2 normally fills up or closes an aperture or gap provided in the bottom of the said coin-chute C, and is so arranged that a coin of the proper value will pass over the same; but a heavier article—such as a disk of lead or the like—will cause the said piece to pivot or move in the direction indicated by the arrows and permit the said disk to drop through the said aperture or gap in the said coin-chute C into the bottom of the box or case A, or into the receptacle d, provided, as before stated, in the bottom of the said box or case for the reception of coins.

The operation of the apparatus is as follows—that is to say, a coin of the proper value and dimensions, having been inserted into the coin slit or aperture B, passes down the coin-chute C and drops, as before described, into the grooves a' and b^2 in the cam or eccentric a and pivoted piece b. Upon the handle E′ being turned slightly, the pivoted piece b is moved by the said cam or eccentric

a and coin and forms contact with the contact-spring c', thus completing the primary circuit. The guide m is then moved by the action of the electro-magnet n, so as to permit the pin or projection k' to pass over the said guide. As the handle E′ is turned each of the bells f is rung in succession, and the brass tube D^2 is moved, so as to uncover more of the core D′ of the induction or intensity coil D. When the said handle E′ has been turned a predetermined distance, the adjustable piece a^2 causes the coin to leave or drop from the said grooves a' b^2 and fall into the receptacle d in the bottom of the box or case A. Should the coin from any cause have a tendency to stick or remain in the said grooves after the handle E′ has been rotated, so as to form contact between the pivoted piece b and the contact-spring c', and is returned to its normal position, the pivoted piece b will be retained by the engagement of the knife-edge b^4 with one or other of the teeth e^2 upon the spring-piece e, and the coin will be released and drop from the said grooves and by striking against the extremity of the said spring-piece e depress the same, and thus release the pivoted piece b, which will resume its normal position under the action of the spring b^3, as hereinbefore described.

The ringing of the peal of bells will indicate to the person operating the apparatus the amount of the electric current that is being given off or transmitted as the core of the induction or intensity coil is uncovered, each successive bell indicating an increase in the strength of the said current, and the entire peal that the strongest possible current has been induced. As each bell is rung or sounded a different flag is exhibited at the window A^3.

Although I have hereinbefore described a convenient and advantageous method of carrying my said invention into practice, it is obvious that I can somewhat modify the construction of my improved apparatus without, however, in any way departing from the nature of my said invention. For instance, the bells or flags or other devices may be actuated either only when the coin is inserted or otherwise. Instead of striking one bell at a time, I may arrange to strike two or more simultaneously. I may also provide some other musical device in lieu of bells.

What I claim is—

1. In an apparatus for permitting the self-administration of electric currents upon the insertion of a coin therein, the combination, with the induction-coil D, comprising core D′ and cover D^2, of the movable handle E′, having a stem E^2, provided with a crank E^*, and the rod E^3, connecting said crank with the cover of the induction-coil, substantially as described.

2. In an apparatus for permitting the self-administration of electric currents upon the insertion of a coin therein, the combination, with the movable handle E′ and an induction-coil provided with means, substantially as described, for varying the strength of the current, of a series or chime of bells f, provided with hammers or clappers i and levers intermediate said hammers, and the movable handle E′, whereby when the handle is operated the bells will be successively sounded to indicate the increase in the strength of the current, substantially as described.

3. In an apparatus for permitting the self-administration of electricity in return for a coin inserted therein, the combination of the movable handle E′, an induction-coil provided with means, substantially as described, for varying the strength of the current, a series or chime of bells provided with hammers or clappers, levers connecting said handle with the induction-coil and bell-hammers, the adjustable guide or switch m, and an electro-magnet controlling said guide or switch to permit the sounding of the bells when, but not until, the proper coin is inserted and the handle operated, substantially as described.

4. In an apparatus for permitting the self-administration of electricity in return for a coin inserted therein, the combination, with a casing having a window or aperture, an induction-coil provided with means, substantially as described, for varying the strength of the current, and the movable handle E′, connected with said induction-coil, of the quadrant or arc p, connected with said handle and having thereon a series of flags or other designs, whereby when the handle is operated the quadrant will be caused to bring said flags or other designs in succession opposite the said window or aperture as the strength of the current is increased, substantially as described.

5. In an apparatus for permitting the self-administration of electricity in return for a coin inserted therein, the combination, with the movable handle E′ and induction-coil D, of means for completing the circuit after the insertion of said coin, comprising the contact-spring c', the grooved cam or eccentric a, and the grooved pivoted piece b, adapted to form or make contact with the said contact-spring when the said movable handle is turned, substantially as described.

6. In an apparatus for permitting the self-administration of electric currents in return for a coin inserted therein, the combination, with the movable handle E′, of means for insuring the release of said coin when the said handle is returned to its normal position, comprising the pivoted piece b, having a knife-edge b^4 on its lower end, and the spring-piece e, having teeth e^2, adapted to engage said knife-edge, substantially as described.

7. The combination, with the induction-coil provided with means for varying the strength of the current, of the pivoted lever, the spring-plate having a suitable pin or projection and

hook, the circular or arc shaped guide or switch, and the electro-magnets, substantially as and for the purpose set forth.

8. The combination of the operating-handle having a stem provided with a grooved cam or eccentric, a grooved pivoted piece having a knife-edge at its lower extremity, a toothed spring-piece, and a spring contact-piece, substantially as and for the purpose set forth.

9. The combination of the operating-handle, the grooved cam or eccentric, the grooved pivoted piece, the contact-spring, the circular or arc shaped piece carrying a chime or peal of bells, a pivoted lever or arm arranged to be operated by the said handle, the clappers or hammers, a pivoted guide, and an electro-magnet, substantially as and for the purposes set forth.

10. The combination, with the grooved cam or eccentric, the grooved pivoted piece b, the receptacle d, and the handle E′, of the adjustable plate or piece a^2 for discharging the coin from the grooves a' b^2 at any predetermined period of the operation, substantially as described.

11. The combination, with the coin chute or aperture, of the improved device for preventing fraud, comprising the pivoted piece C^2, having a counterweighted arm or extension C^4, substantially as described.

12. The combination of a box or case A, having a coin-aperture B and chute C, a battery located in said box, the induction-coil D, comprising core D′ and tube or cover D^2, the handles E E′, one of which is movable, the crank-arm E* and rod E^3 connecting the movable handle with the cover of the induction-coil, the contact-breaker D^3, the spring D^4, the grooved cam or eccentric a, connected with the movable handle, the grooved pivoted piece b, the contact-spring c', the bells f, having hammers i and levers intermediate said hammers, and the movable handle, substantially as described.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN STEWART WALLACE.

Witnesses:

A. E. NIXON,

A. H. SLEATH.