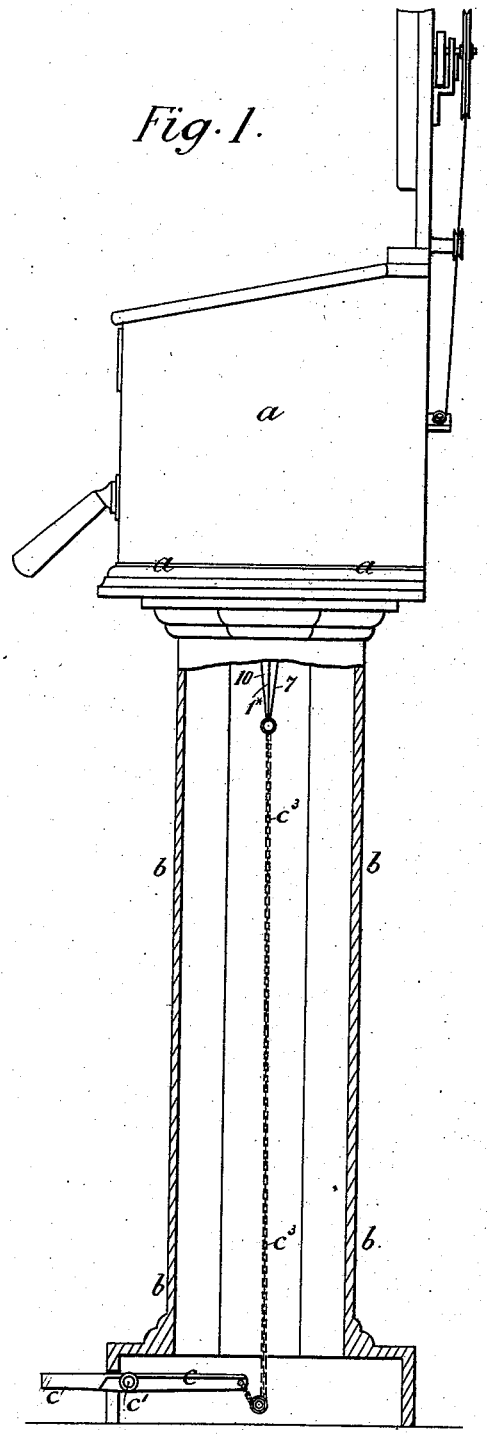
(No Model.) 7 Sheets—Sheet 1.

N. W. RUSS.

COIN OPERATED ELECTRICAL APPARATUS.

No. 382,734. Patented May 15, 1888.

Fig. 1.



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COIN OPERATED ELECTRICAL APPARATUS.

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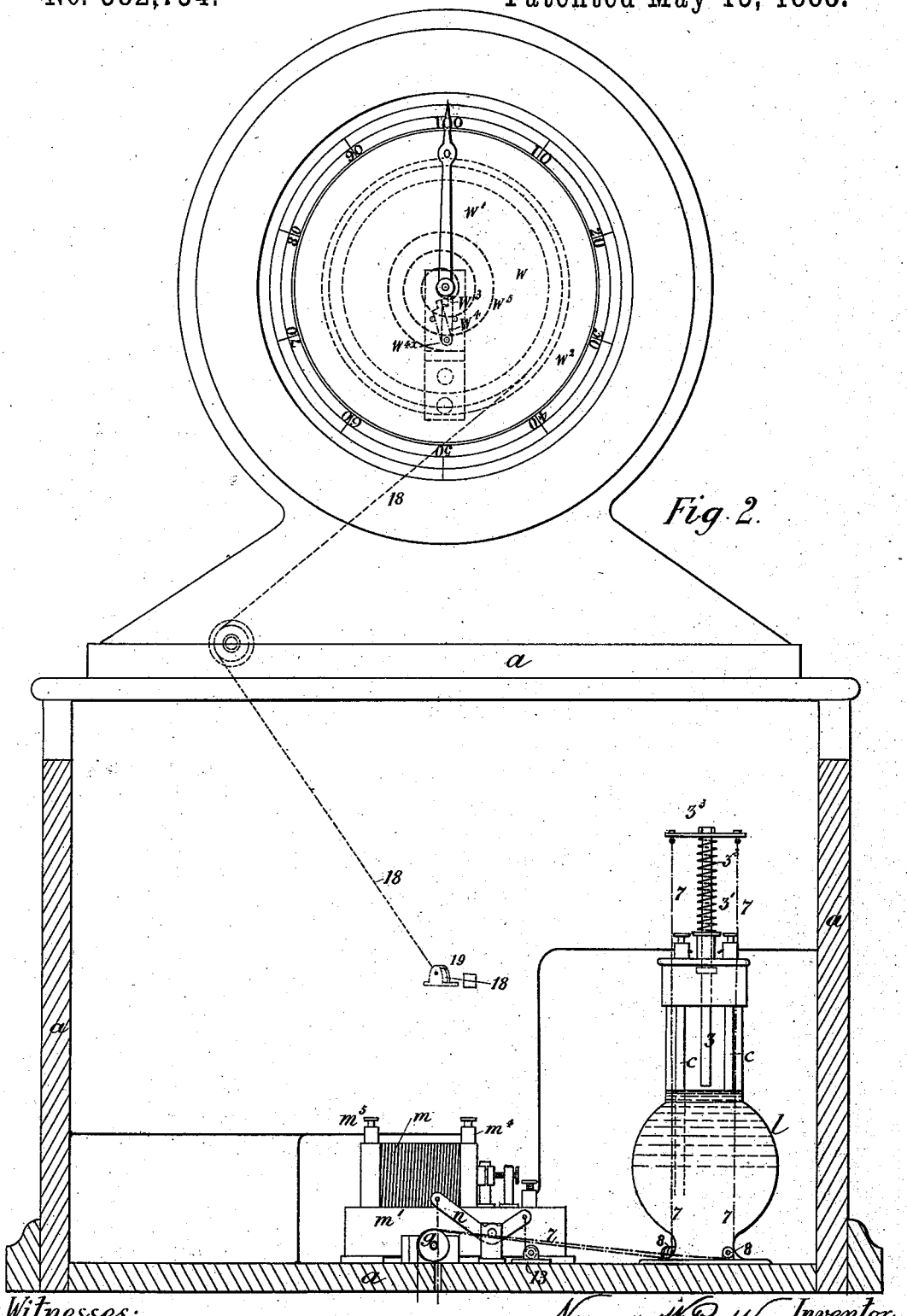

Fig. 2.

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COIN OPERATED ELECTRICAL APPARATUS.

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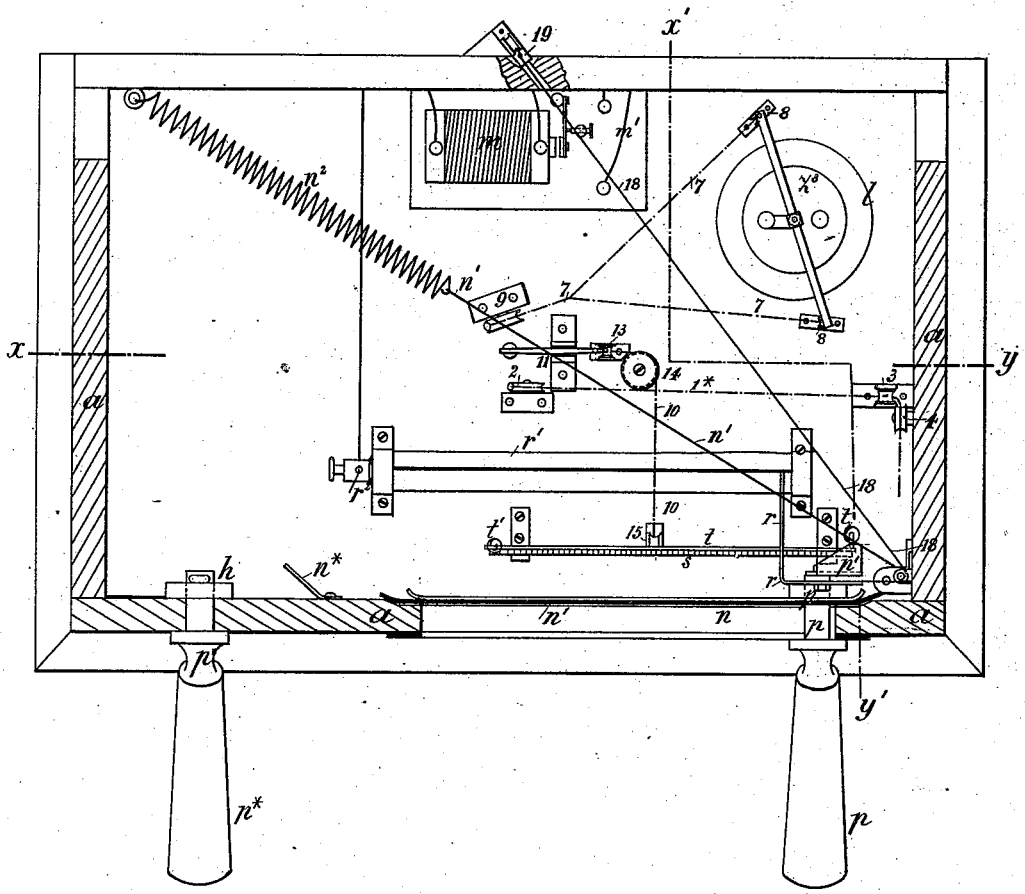
Fig 3.



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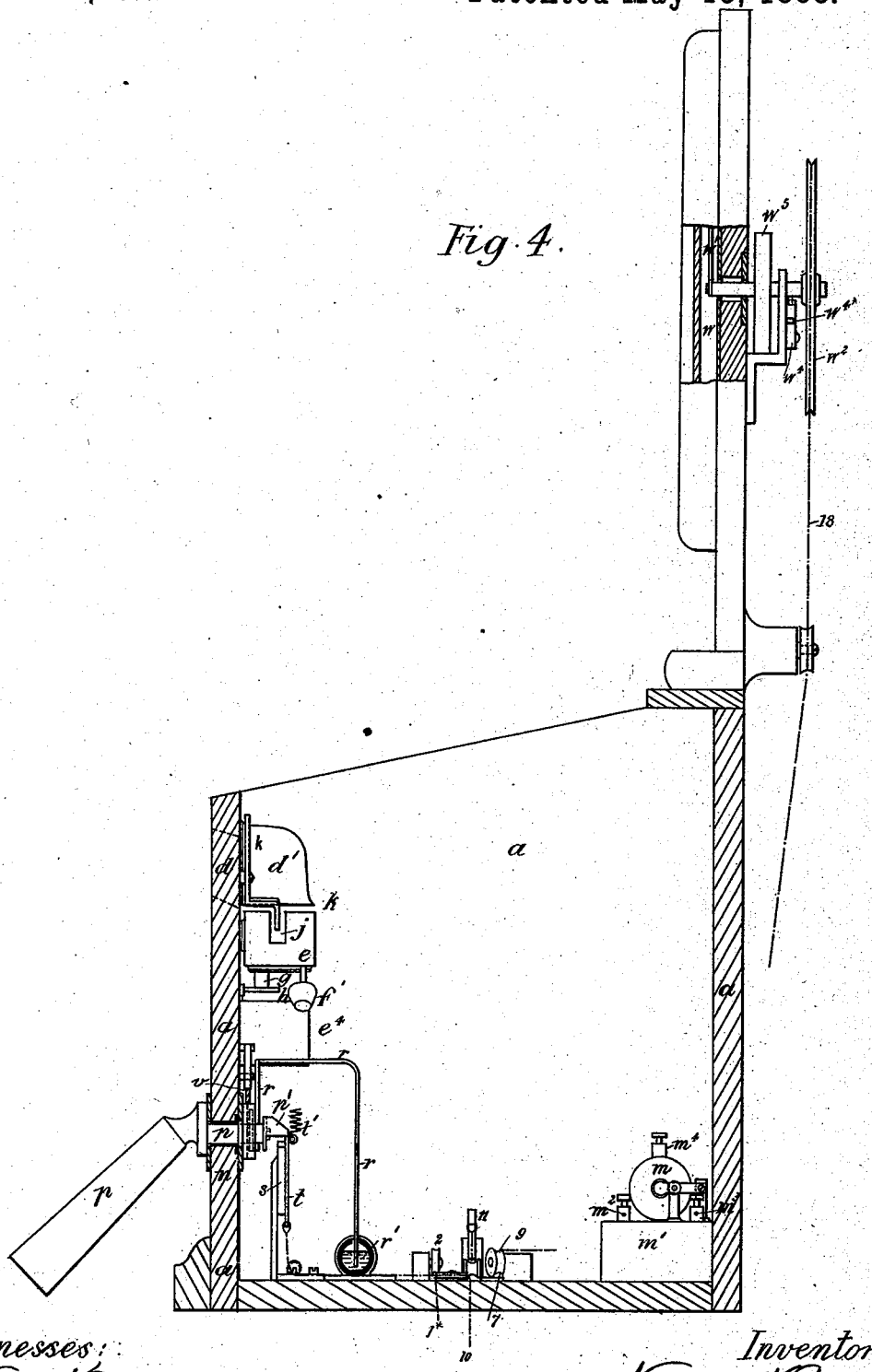
COIN OPERATED ELECTRICAL APPARATUS.

No. 382,734. Patented May 15, 1888.

Fig. 4.



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COIN OPERATED ELECTRICAL APPARATUS.

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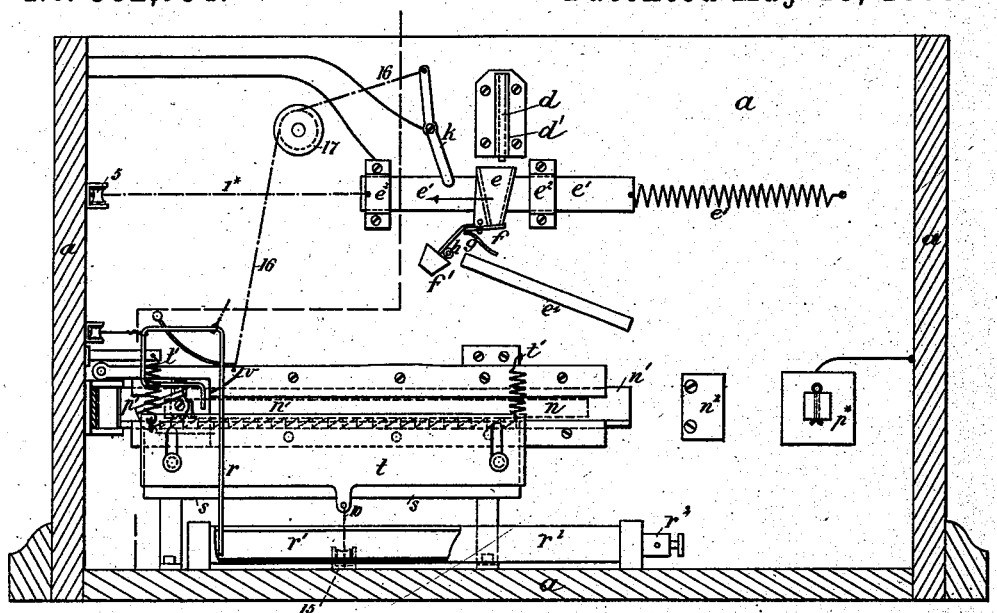

Fig. 5.

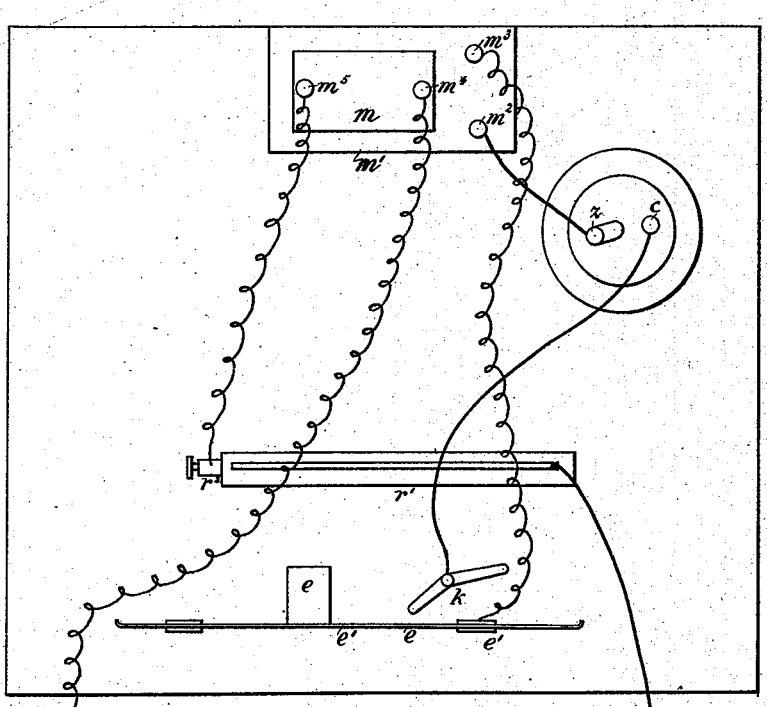

Fig. 6.

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COIN OPERATED ELECTRICAL APPARATUS.

No. 382,734. Patented May 15, 1888.

Fig. 7.

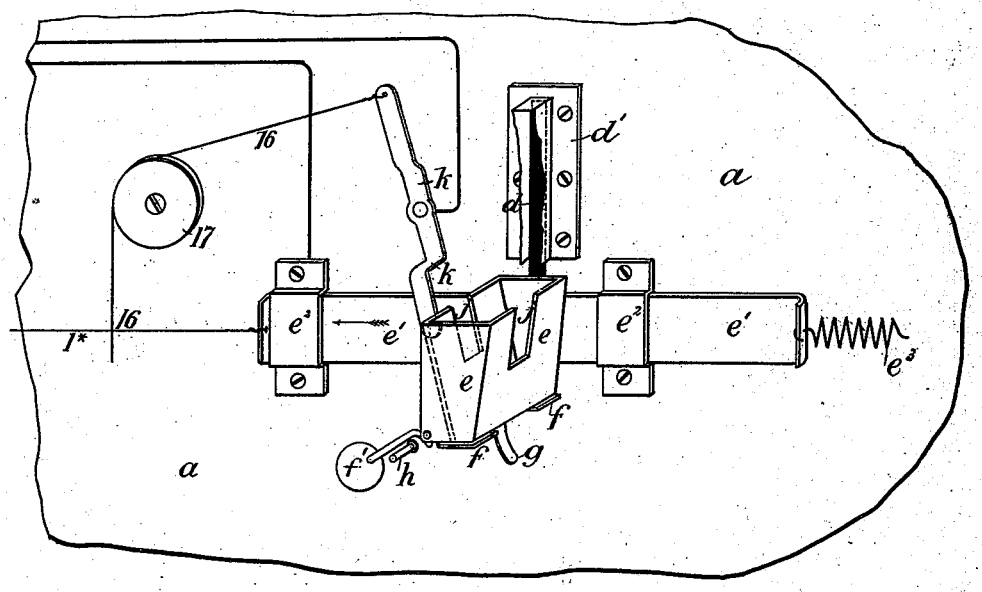


Fig. 8.

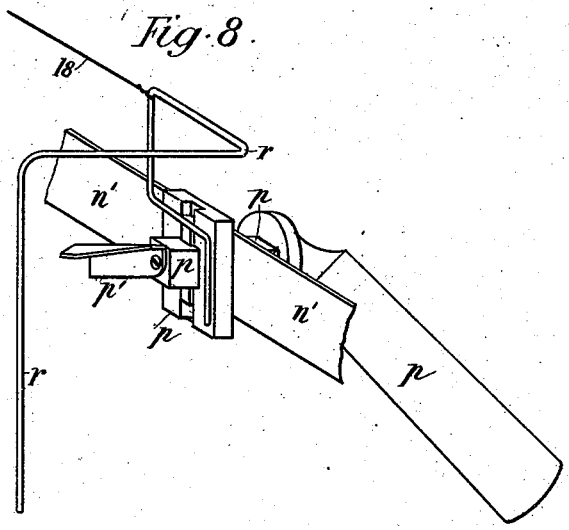
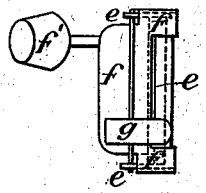


Fig. 9.



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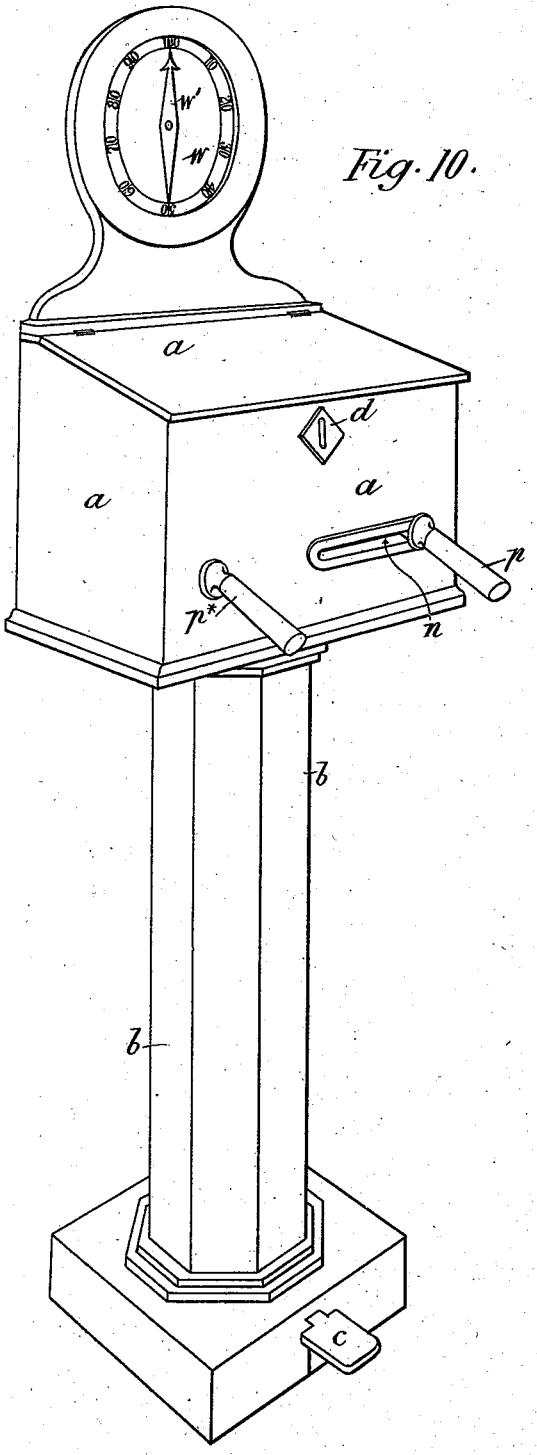
COIN OPERATED ELECTRICAL APPARATUS.

No. 382,734. Patented May 15, 1888.

Fig. 10.



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UNITED STATES PATENT OFFICE.

NORMAN W. RUSS, OF LONDON, ENGLAND.

COIN-OPERATED ELECTRICAL APPARATUS.

SPECIFICATION forming part of Letters Patent No. 382,734, dated May 15, 1888.

Application filed January 3, 1888. Serial No. 259,688. (No model.) Patented in England July 17, 1886, No. 9,310; in France April 19, 1887, No. 182,971, and in Belgium April 20, 1887, No. 77,150.

To all whom it may concern:

Be it known that I, NORMAN WILLIS RUSS, a subject of the Queen of Great Britain, residing at London, England, have invented a Coin-Operated Electrical Apparatus, (for which patents have been taken out in the following countries: Great Britain, No. 9,310, July 17, 1886; France, No. 182,971, dated April 19, 1887, and Belgium, No. 77,150, dated April 20, 1887,) of which the following is a specification.

The object of my invention is to enable persons in public and other places—such, for example, as railway-stations, exhibitions, or even private houses—to obtain an electric shock or a current of electricity without the aid of an attendant by the insertion of a coin of a certain size—such as a penny—into a receptacle provided for the same.

According to my invention I provide a receptacle to hold a battery, coil, and connections, all of which are worked or set in action, preferably by the movement of the foot on a treadle, in such manner that contact is made with the coil and the coin-receiver is brought forward into such position that the circuit is completed through the coin, which cannot take place unless the coin has been previously inserted in the receiver for same.

In order that my invention may be fully understood, I will describe same with reference to the accompanying drawings.

Figure 1 is a side view, sectional at the base in order to show the treadle action. Fig. 2 is a longitudinal vertical section of the upper part of the machine, taken through the line *x y* of Fig. 3. Fig. 3 is a horizontal section showing the positions of the various parts on the bottom of the interior of the receptacle. Fig. 4 is a vertical cross-section of the machine on the line *x' y'* of Fig. 3. Fig. 5 is a vertical longitudinal section showing the arrangement of parts on the interior of the front side of the receptacle. Fig. 6 is a diagram view showing the electric connections. Fig. 7 is a perspective view of a portion of the interior face of the front side of the receptacle, showing the arrangement of the coin-receiver; and Fig. 8 is a detached perspective view of the movable handle and parts connected therewith. Fig. 9 is an inverted plan of the coin-receiver, showing the bottom cover; and Fig. 10 is a perspective view of the machine complete.

a is the receptacle, which may be of any approved form or design, as circumstances may require, and be made of wood or be formed of metal, or a combination of both, as shown at Fig. 1, where the receptacle *a*, which contains the battery, coil, connections, and working parts, is shown mounted on a pillar or pedestal, *b*, of octagonal form, but which might be of other shape or configuration.

c is the treadle, (see Fig. 1,) turning on a pivot, *c'*, on the base of the pedestal *b*. A spring or counterbalance-weight may be employed to retain the pedal normally in the position shown in the drawings.

c^3 is a chain or other connection which passes upward through the pedestal *b*, and is the medium through which the motion of the treadle *c* is communicated to the various working parts of the mechanism, as hereinafter described.

There is a slot, *d*, (see Fig. 10,) in the front of the case or receptacle, through which the coin is inserted, and, being conducted by a chute, *d'*, it falls into a coin-receiver, *e*, which is so situated as to catch the said coin. This coin-receiver *e* is mounted on a slide, *e'*, sliding in guides e^2, and is normally held in the position shown on the drawings by a tensional spring, e^3, having one end secured to the slide and the other to the box or case *a*. The end of the slide *e'* is bent, and by coming into contact with one of the guides e^2 forms a stop. The coin-receiver consists of a metal box, *e*, provided with a hinged bottom, *f*, which is kept closed by a counterbalance-weight, *f'*. The hinged bottom *f* does not entirely cover or close the bottom opening of the box *e*, but contracts such opening, as best seen by the inverted plan, Fig. 9, so that any coin falling into the box *e* of less than the desired size or diameter would fall through the opening left by the closed bottom cover, *f*.

g is a spring-arm fixed to the hinged bottom *f*, and operates, as hereinafter described, in conjunction with a stud-pin, *h*, fixed on the side of the receptacle *a*. (See Figs. 5 and 7.)

Slots *j j* are made in the sides of the coin-receiver *e*, (see Figs. 4 and 7,) allowing the end

of a lever, *k*, to freely pass during the travel of the coin-receiver to the left of Figs. 5 and 7—that is, if no coin has been placed or has remained in the receiver *e;* but when a coin has been placed and held in the receiver and the latter is slid to the left in the direction of the arrow, Figs. 5 and 7, the coin comes in contact with the end of the lever *k* and rocks it on its fulcrum with an effect, as hereinafter described. During such motion the spring-arm *g* comes against the stud-pin *h*, fixed to the side of the receptacle *a*, and the arm *g* springs over the said stud *h* without taking any effect or acting on the hinged bottom *f* of the receiver *e;* but on the return motion of the receiver *e* the arm *g* will catch on the pin *h* and will cause the said bottom *f* to turn on its hinge and allow the coin to fall.

The slide *e'*, carrying the receiver *e*, is operated by the depression of the treadle, causing the chain c^3, Fig. 1, to act upon a cord, $1^{\times}$, connected to the said chain, passing over a pulley, 2, and along the bottom of receptacle *a*, (see Fig. 3,) under a pulley, 3, with a horizontal axis up the right-hand side of receptacle *a*, (see Fig. 3,) over a pulley, 4, and is then turned at right angles by a pulley, 5, Fig. 5, along the front of box *a*, (see Figs. 5 and 7,) and is fastened to the slide *e'*.

l, Figs. 2 and 3, is the battery, that shown being an ordinary bichromate battery; but a battery of any approved description may be employed.

z is the zinc element in same.

z' is a rod, and z^2 a spring, by which the zinc is kept raised from the solution and the battery out of action.

z^3 is a cross-head, to which the ends of the divided cord 7 7 are connected. This cord passes from the battery cross-head z^3 under the pulleys 8 8 (see Figs. 2 and 3) and over pulley 9 on the bottom of receptacle *a*, and, passing through same, is connected to the end of the chain c^3, so that on the depression of the treadle *c* the zinc *z* is immersed into the solution and the battery set in action.

m is the coil on base-plate *m'*. (Shown in plan at Fig. 3 and in elevation at Figs. 2 and 4.)

There is a slot, *n*, Figs. 3 and 10, through the box *a* at the front, and along this slot the handle *p* is traveled when desired for the purpose of obtaining a greater force of current, as hereinafter described. The slot *n* may advantageously be covered upon the inner side by a slide, *n'*, formed of a strip of thin metal—such as clock-spring—and kept in position by guides. Through this metal slide *n'* the handle passes, and is secured, so that when moved in the slot *n* the metal cover *n'* is also moved or slid with it. One end of the said slide *n'*, after passing round a roller on the side of the box *a*, I connect to a spiral spring, n^2, Fig. 3, which by the travel of the handle is elongated, its retractile force serving to bring the handle back to its normal position.

$n^{\times}$ is a deflecting-plate and prevents the end of the metal slide from coming into contact with the interior end of the other left-hand handle, $p^{\times}$. A wire, *r*, Figs. 3, 4, 5, and 8, or other suitable connection, is attached to the handle *p*, and, extending downward, it has its other end sliding in a trough, *r'*, formed of non-conducting material—such as ebonite or glass—containing water, and placed parallel with the direction of travel of the handle *p*. An electrical connection, hereinafter mentioned, direct from the coil *m* enters this trough of water, *r'*, by the terminal r^2 at one end, and as the handle *p* and wire *r* are brought nearer to this end of the trough *r'* the intensity of the current is increased. Where found convenient, other equivalent means may be substituted for this purpose.

To the inner side of the handle *p* a pawl, *p'*, is fitted, traveling over the teeth of a fixed rack, S, secured to the box *a* by bracket-standards, the said pawl when engaged with the teeth of the rack preventing the handle *p* being pushed back until properly released.

Longitudinally with the toothed rack aforesaid I provide a sliding plate, *t*, held by springs *t' t'*, or other suitable means, in a position slightly higher than the level of the teeth of the rack S, and preventing the pawl *p'* taking into same. At its lower end the sliding plate *t* is connected by means of a cord, 10, Fig. 3, to the chain c^3. This cord passing from the said chain actuates a two-armed lever, 11, to the other arm of which is attached the cord 10, which passes under a pulley, 13, and round a pulley, 14, and passing under the vulcanite tube *r'* under a pulley, 15, and is connected to the sliding cover-plate *t*, as aforesaid, which latter, when drawn downward, allows the pawl to work in and over the teeth of the rack S. Upon releasing the treadle the springs *t' t'* draw up the plate *t* and lift the pawl *p'* out of the teeth of the rack S and allow of the due travel of the handle backward by means of the spiral spring n^2 aforesaid. When the handle *p* has been brought back, it is retained in its place by a locking lever or pawl, *v*, (see Fig. 5,) which it lifts during its said backward motion by striking against the inclined part of the tooth, and the lever *v* is brought down by a spring and secures the handle *p* in position.

There is a cord, 16, (see Figs. 5 and 7,) from the locking-lever *v* of the handle *p* passing over pulley 17 in front of box *a*, and this cord is connected to one arm of the lever K. When this latter lever is forced into a more vertical position by contact with the coin, the locking-lever *v* is lifted by the cord 16 and releases the handle, which is then free to be slid along the slot.

A registering dial and pointer, *w w'*, is provided, connected by a cord, 18, fixed at one end to the handle *p*, Figs. 3 and 8, passing through a hole in the back of the receptacle *a*, under a pulley, 19, (see Fig. 3,) and round a suitable pulley or pulleys (shown by dotted lines, Fig. 2) to a wheel, w^2, on the axis of the pointer *w'*. When the handle *p* is moved, the cord 18 will

cause the wheel w^2 to rotate and the hand w' to be moved from zero round the dial until it has made one revolution, when a pin, w^3, on the pointer-shaft comes into contact with a rocking stop, w^4. The rocking stop w^4 is free to move on a pivot between two fixed pins, $w^{4\times}$, only so much as will allow for the diameter or thickness of the stop-pin w^3 on the pivot of spindle, in order that the said pointer shall make an entire revolution. w^5 is a spring for returning the hand or pointer back to zero when the handle p is returned to its normal position and releases the cord 18. The stop-pin w^3 also serves to stop the backward motion of the pointer when it reaches its appointed position at zero, acting as before described, but in a reverse manner.

The electric battery is connected to the various parts as follows, such connections being clearly shown by the diagram plan, Fig. 6:

z and C are the two terminals of the battery. The terminal z is connected to the terminal m^2 on the base-plate m' of the coil m. C is connected with the fulcrum of the lever k, with which the coin is brought into contact by the motion of the pedal. The terminal m^3 of the coil is connected to the slide e' of the coin-receiver e. The terminal m^4 on coil m is connected to the fixed left-hand handle, $p^\times$, and the terminal m^5 to the terminal r^2 on the end of the vulcanite tube r'.

The person wishing to obtain an electric shock or a current of electricity first inserts a coin of the required size into the aperture or slot d, Fig. 10, for same. Then the treadle c is depressed by the foot, and, taking hold of both handles p $p^\times$, the handle p may be slid toward the handle $p^\times$, all according to the desired strength of the current, and the index-finger, moving round the dial, will show the proportional increase of intensity of the current.

The depression of the treadle causes the following simultaneous actions of the various parts to take place:

First. The cord 7 7 from the chain c^3 acts on the cross-head z^3, and the consequent depression of the zinc element into the solution thereby sets the battery in action.

Secondly. The cord $1^\times$, passing from the chain c^3 over the pulley 2, moves the slide e' and coin-receiver e, causing it to travel toward the lever k in the direction of the arrow, Fig. 5, and during such travel the spring-arm g jumps or springs over the pin h without affecting the position of the bottom f of the receiver e. By the contact of the coin with the end of the lever k electrical connection is completed between the electrode C (which is in electrical connection with the lever k) and the terminal m^3 on the base-plate of the coil m, such connection being through the coin, the coin-receiver e, slide e', and by the wire-connection before mentioned to the said terminal m^3; thence through the primary of the induction-coil to terminal m^2; thence to the electrode z. This connection sets in operation the vibrator of the induction-coil and creates induced currents in the secondary circuit and the terminals m^4 and m^5 of said circuit to the person holding the handles p $p^\times$, one of said handles being connected directly to terminal m^4 and the other to terminal m^5 through the water in the tube r'. The rocking of the lever k by the contact and pressure of the coin causes the lever v (locking the handle p) to be lifted by the cord 16, allowing the handle p to be slid in its slot.

Thirdly. The cord 10, connected to the chain c^3, will actuate the two-armed lever 11, which by cord 10 will draw down the sliding plate t and uncover the tooth-rack s, so that by the pawl p' entering the teeth the handle p, if advanced along the slot, cannot be returned unless the pedal is released. The motion of the handle p will be communicated to the pointer, as hereinbefore described.

When it is desired to stop the current, the pressure of the foot on the pedal is removed and the pedal is carried up to its normal position by the spring, thus releasing the three cords connected with the chain c^3. Thereupon the release of the cord 7 7 allows the spring z^2 to raise the zinc element out of the solution in the battery l, thus placing the latter out of action. The release of the cord 10 allows the springs t' t' to raise the sliding plate t and lift the pawl p' from the teeth of the rack s, and the spring n^2, connected to the metal slide n', at once draws the handle p into its normal position. The releasing of the cord $1^\times$ allows the spring e^3 to draw back the slide e', carrying the coin-receiver e, and during such backward motion the spring-arm g comes in contact with pin h and opens the cover f, and allows the coin to fall down—for example, such a chute or incline as is shown at e^4, Figs. 4 and 5—into any suitable receptacle. The locking-lever v will, after the handle has passed between its tooth, descend (assisted by a spring above the same) and lock the said handle, while at the same time the connecting-cord 16 will draw the lever k into position, and the machine is again in position to receive another coin, as before.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that I am aware that it is not new by the insertion of a coin or token into a box to obtain some article therefrom of equivalent value. Many arrangements of apparatus have been proposed for this purpose. It has also been proposed to provide apparatus for testing and registering pulling and pushing power of persons by the introduction of a coin; also lung-power by similar means.

I claim—

1. In a machine for producing or administering electricity, the combination of a movable coin-receptacle and a treadle operated by the recipient of the electric current and serving by the agency of a coin deposited in the receptacle to complete the electric circuit, substantially as shown and described.

2. In a machine for producing and administering electricity on depositing a coin therein, the combination of treadle *c*, a battery, coil, and connections operated thereby, and a sliding coin-receptacle, *e*, serving when slid to complete a circuit by the agency of the coin and to give the shock, substantially as set forth.

3. In a machine for producing and administering electricity on the deposit of a coin therein, the combination of the following devices, namely: the coin-receptacle *e*, having the self-closing hinged bottom *f*, spring-arm *g*, and side slots, *j j*, slide *e'*, and its spring e^3, fixed pin *h*, lever *k*, treadle *c*, and its described connections, substantially as and for the purposes set forth.

4. In a machine for producing and administering electricity on the deposition of a coin therein, the means described and shown for increasing and diminishing the force of the current, consisting, essentially, of the combination of sliding handle *p*, slot *n*, slide *n'*, wire *r*, trough *r'*, and electrical connection from a coil, *m*, to the water in the trough, substantially as set forth.

5. In a machine for producing and administering electricity on the deposit of a coin therein, the combination, with the movable handle *p*, of the wire *r*, attached thereto, water-trough regulator *r'*, and an electrical connection from the coil to the trough, substantially as set forth.

6. In a machine for producing and administering electricity on the deposition of a coin therein, the rack *s*, and pawl *p'* on handle *p*, in combination with the sliding cover *t*, all substantially as hereinbefore set forth.

7. In a machine for producing and administering electricity on the deposition of a coin therein, the means described for bringing the element into the excitant, consisting of the combination of a battery, cord 7 7, cross-head z^3, rod *z'*, guide-pulleys 8 9, chain c^3, and treadle, substantially as set forth.

8. In a machine for producing and administering electricity on the deposition of a coin therein, the means employed for indicating on a dial the proportional increase of current administered to the recipient, consisting of the combination of dial *w*, pointer *w'*, wheel w^2, stop-pin w^3, arm w^4, pins $w^\times$, and spring w^5, acted on by cord 18, all substantially as herein set forth.

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