

(No Model.)

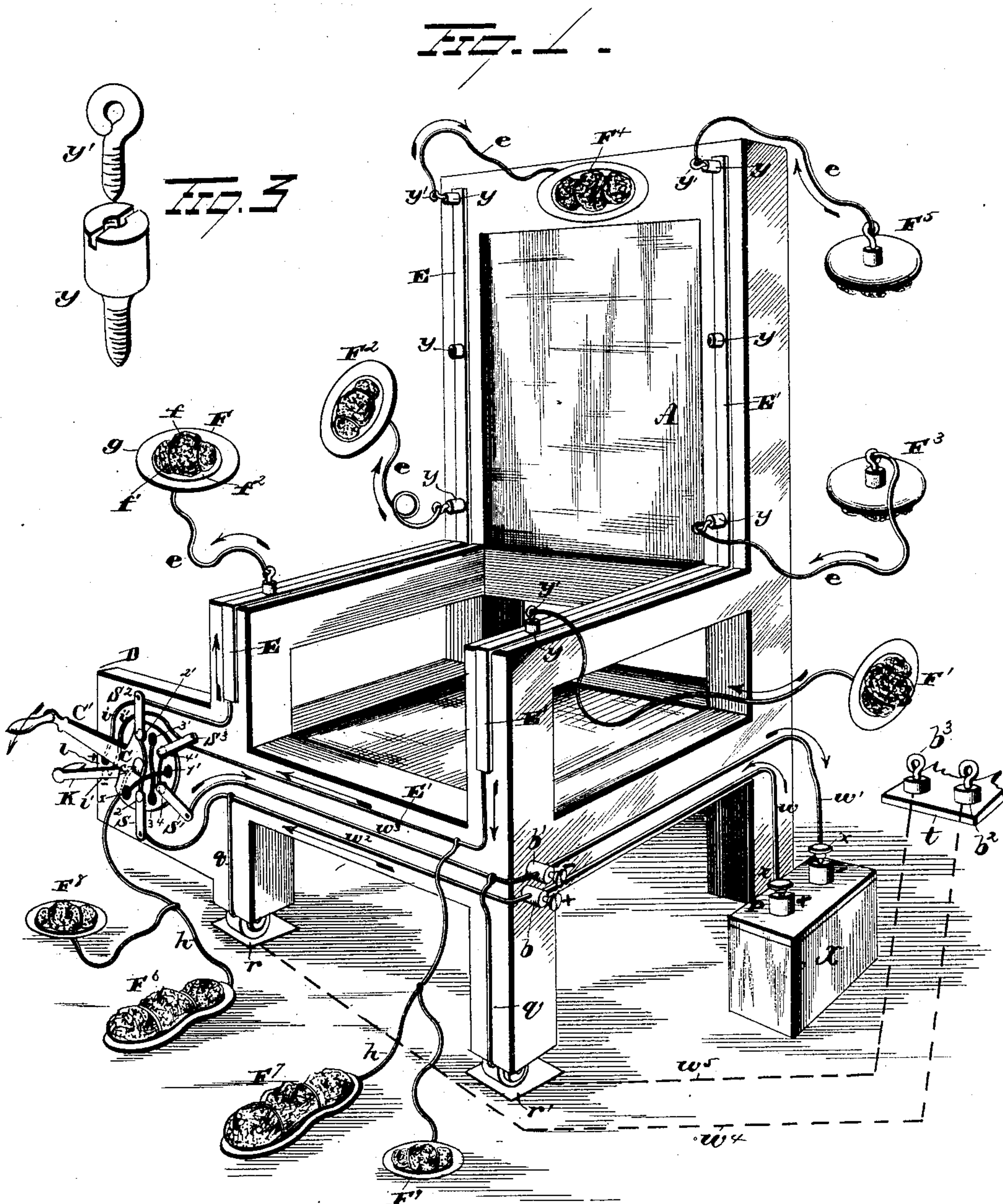
2 Sheets—Sheet 1.

E. H. THURSTON.

DEVICE FOR APPLYING ELECTRICITY TO THE HUMAN BODY.

No. 309,897.

Patented Dec. 30, 1884.



WITNESSES
R. J. Nottingham
Geo. F. Downing

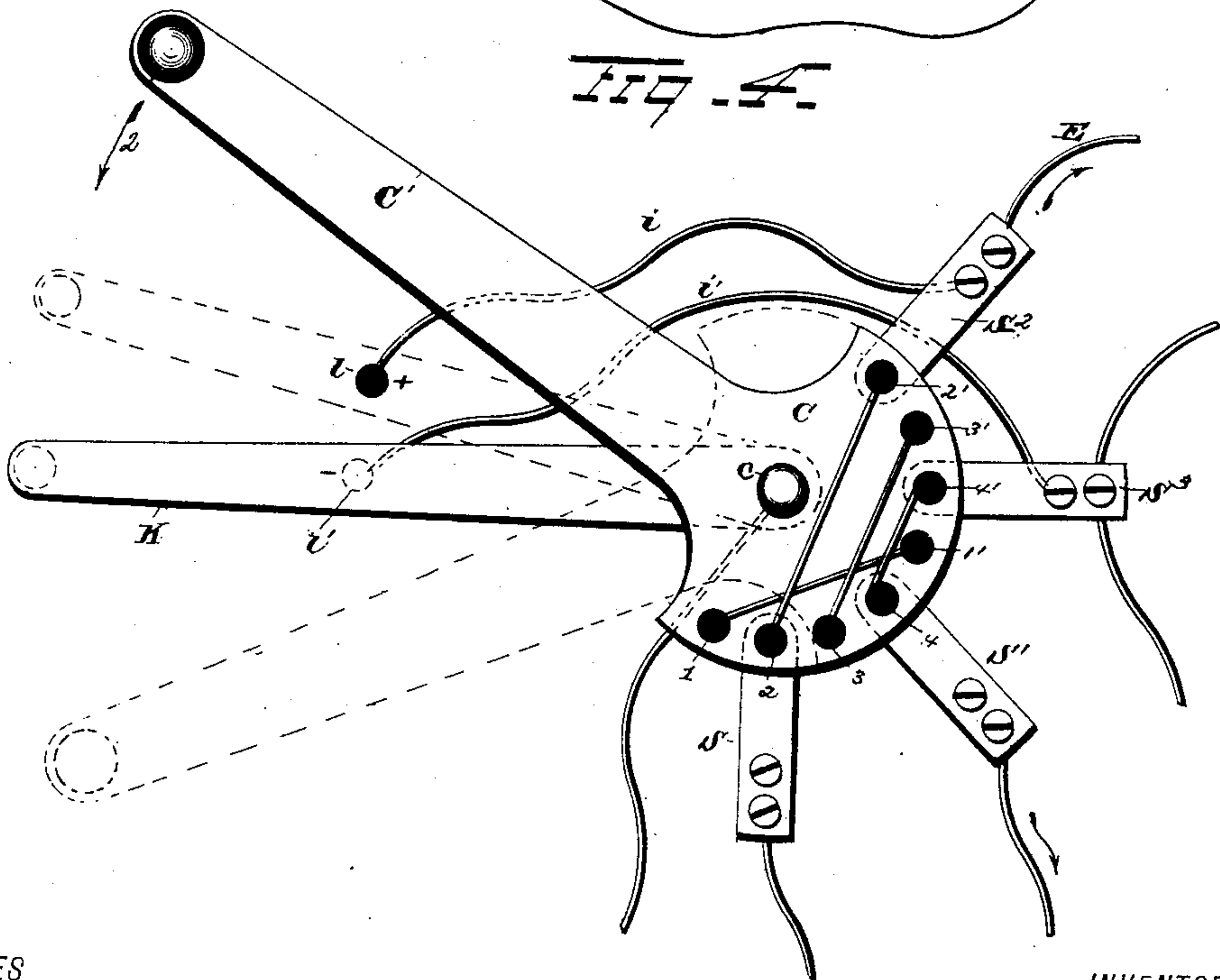
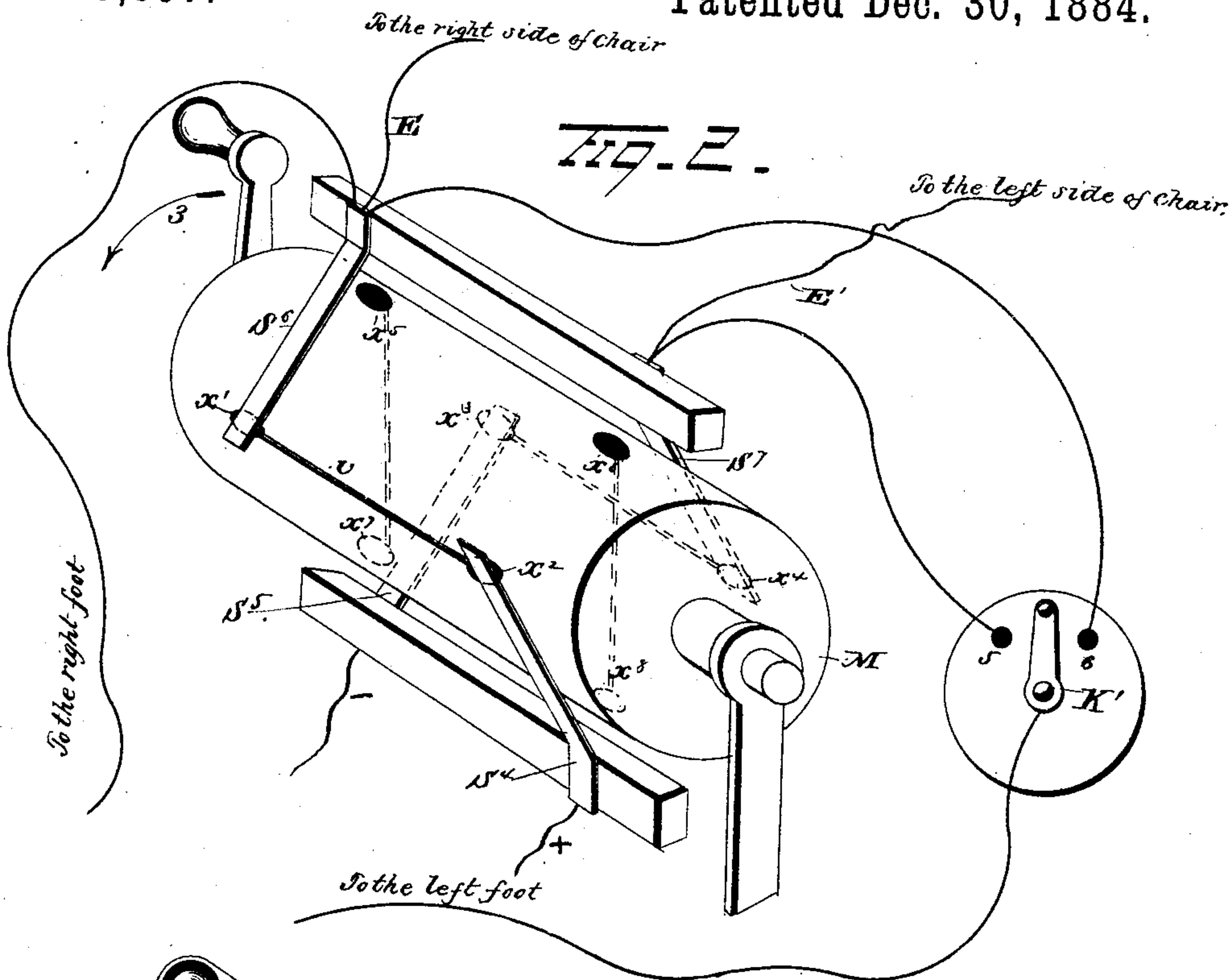
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UNITED STATES PATENT OFFICE.

ELI H. THURSTON, OF HAGERSTOWN, INDIANA.

DEVICE FOR APPLYING ELECTRICITY TO THE HUMAN BODY.

SPECIFICATION forming part of Letters Patent No. 309,897, dated December 30, 1884.

Application filed March 3, 1884. (No model.)

To all whom it may concern:

Be it known that I, ELI H. THURSTON, of Hagerstown, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Devices for Applying Electricity to the Human Body; and I do hereby 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.

My invention relates to devices for applying electricity to the human body for therapeutical purposes, its object being to facilitate the application of electrical currents simultaneously to various parts of the body, and to provide for conveniently changing the direction of such currents through the body at the will of the operator.

My invention consists, mainly, in a novel combination of a suitable electric generator, main conductors, branch conductors, electrodes for applying the current, and a pole-changer, with, preferably, a switch in addition to the pole-changer, as will be fully understood from the following particular description and the accompanying drawings.

It also consists in certain novel details of construction, which will be fully described and illustrated.

My invention is applicable to chairs, tables, beds, baths, and other articles for receiving the human body.

In the accompanying drawings, Figure 1 is a perspective view of a chair having my invention applied thereto. Fig. 2 is a similar view of a modified form of the pole-changer and switch. Fig. 3 is a perspective view of one of the improved binding-posts. Fig. 4 is an enlarged detached view of the switch and pole-changer shown connected with the chair in Fig. 1.

The letter A indicates the frame-work of a chair having secured to one side thereof two binding-posts, *b* and *b'*, which are respectively connected to the opposite poles of a galvanic battery, X, by means of wires *w* and *w'*. To the opposite side of the chair from these binding-posts is secured a bracket, D, upon which is pivoted a pole-changer consisting of a non-conducting semicircle, C, provided with a handle, C', by which it may be turned upon its

pivot *c*. This pole-changer is provided with connected pairs of metallic plates or buttons 1 1' 2 2' 3 3' 4 4'. Upon the bracket D are secured springs S S' S² S³, having free ends extending upon the margin of the semicircle C, and arranged to make contact with alternate buttons simultaneously. The binding-post *b*, which is connected with the positive pole of the battery, is also connected by a wire, *w*², with the spring S, and the other binding-post is connected by a wire, *w*³, with the spring S'. From the spring S² a conducting-strip, E, leads upward along the front and top of the right arm of the chair, and also along the front of the right-hand side of the chair-back, and from the spring S³ a similar strip, E', leads to the left arm of the chair, and along its surface and the left side of the chair-back in a similar manner. Each of these strips is provided with a series of binding-posts, *y*, adapted to receive attaching-screws *y'*, such as shown in Fig. 3. These binding-posts and attaching-screws are for the purpose of connecting to the strips suitable electrodes for communicating the electric current to various parts of the body of a person occupying the chair—as, for instance, F and F' are electrodes for the arms, F² and F³ for the sides of the body and the back, and F⁴ F⁵ for the neck and opposite sides of the head. To the strip E' is also connected by a wire, *h'*, an electrode, F⁶, for the left foot, while an electrode, F⁶, for the right foot is connected by a wire, *h*, with a switch, K, by means of which it may be connected with either of the strips E or E'. This switch K is a metallic arm pivoted on the pivot *c* of the pole-changer, and adapted to be swung into contact with either of two metallic buttons, *l* or *l'*, located on the bracket D, and respectively connected by wires *i* and *i'* with the springs S² and S³. To the wires *h* and *h'* are also connected electrodes F⁸ and F⁹, for application to the legs of the patient.

To the wires *w*² *w*³ are respectively connected wires *q* *q*, which lead to the metallic casters of the chair. Upon the floor are arranged metallic plates *r* *r'*, which are connected by wires *w*⁴ *w*⁵ with binding-posts *b*² *b*³, arranged upon a suitable shelf, *t*, and which may be connected with opposite poles of the battery, as indicated by dotted lines. The floor-plates and connections may be used for communicating

the current to the conductors of the chair independently of the binding-posts b and b' , but are not intended to be used simultaneously therewith. Each of the electrodes consists of
5 a sponge, f , secured to a metallic back plate, f^2 , by means of elastic bands f' . To the metallic back plate is secured a binding-post, y , as shown, to receive one of the attaching-screws, y' , with which the cords c are provided
10 at each end, said cords being used for connecting the electrodes with the binding-posts of the connecting-strips E and E' . Each of the electrodes is preferably provided with a protector consisting of a pad, g , made of card-
15 board covered with enameled duck or oil-cloth, and secured to the back of the metallic back plate. This protector prevents water from dripping from the sponge upon the upholstery of the chair or upon the clothing of
20 the patient. In using the electrodes the sponges are to be wet with water or dilute acid in the usual manner, and may be laid upon the various parts of the body and supported in any convenient manner or as customary in
25 using electro-therapeutic apparatus of this class.

In using the apparatus the operator manipulates the pole-changer and switch to direct the current through the various parts of
30 the body as his judgment may direct. It will be observed that with the pole-changer arranged as shown in the drawings, Fig. 1, the current leaving the positive pole of the battery X will follow the wire w and wire w^2 , as
35 indicated by the arrows, to the spring S of the pole-changer, and from this spring travels to the spring S^2 , from which it goes to the conducting-strip E and the electrodes arranged for application to the right-hand side of the
40 body, and after passing through the body to the electrodes of the left-hand side will travel, as indicated by the arrows numbered 1, along the connecting cords and strip E' to the spring
45 S^3 of the pole-changer, from which it crosses to spring S' , and follows the wires w^3 and w' to the negative pole of the battery. If, now, the handle of the pole-changer be moved as
50 indicated by the arrow numbered 2 the pole-changer will be shifted so as to make contact between the springs of the pole-changer and buttons thereof adjacent to those which they
are shown as resting upon in the drawings, and then the current from the positive pole of the battery will flow over the wires ww^2 and spring
55 S to button number 1 of the pole-changer, and cross over to button $1'$, and thence to spring S^3 , conducting-strip E' , and the electrodes of the left-hand side, and from the electrodes of the right-hand side it will flow to strip E , and
60 over this strip and spring S^2 to button 3' of the pole-changer, from which it will cross over to button 3, and flow thence over spring S' , wire $w^3 w'$, to the negative pole of the battery, its direction through the body being the reverse of what it was in the first instance.
65 In whichever direction the current may be passed through the upper portion of the body

it may be at the same time reversed through the feet and the legs independently by means of the switch K . For instance, if the current
70 is flowing by the unnumbered arrows from the positive pole, as shown in Fig. 1, and the switch K be situated as shown in said figure, a portion of the return-current to spring S^3
75 will follow the wire i' to the switch, and thence flow over the wire h to the electrode F^6 of the right foot, and another portion of the current will flow over the wire h' to the electrode F^7 of the left foot, so that the return-current will flow up both legs of the patient,
80 and may also be communicated to intermediate portions of the legs by the electrodes F^8 and F^9 . If, however, the switch were moved into contact with the button 1, then a portion of the
85 positive current would flow from the spring S^2 over wire i to the switch and the electrodes of the right foot and leg, while the negative current would flow over the electrode F^7 and F^9 of the left foot and leg. Currents would be caused
90 through the legs in other obvious directions if the pole-changer were shifted into its alternative position while such changes of the switch were being made. It will be noticed that if
95 the pole-changer were shifted to bring the spring S' on the button $1'$ of the pole-changer the current would be broken, and thus the operator is enabled to stop the flow of the current
at any time without going to the battery. I have provided the conducting-strips E and E'
100 with binding-posts at several intermediate points, so that the electrodes may be connected in position as found convenient. These binding-posts are of an improved construction, each consisting simply of metallic screw
105 y , bored centrally from its head, and internally screw-threaded, the attaching-screw y' being screwed into the post and removable therefrom at pleasure.

In Fig. 2 I have illustrated a modified construction of the pole-changer and switch, which
110 may be used in lieu of the form shown in Fig. 1, and may be located on a suitable shelf projecting from one side of the chair. The letter M indicates a non-conducting cylinder
115 having upon its upper side two buttons or metallic plates, $x' x^2$, connected by a wire, v , and on its under side, as shown in dotted lines, two buttons, $x^3 x^4$, connected by a wire, v' . It has also on its upper side two other buttons,
120 $x^5 x^6$, which are connected by wires passing through the cylinder to buttons x^7 and x^8 . The springs S^4 and S^5 are to be connected to the opposite poles of the battery, and the springs
125 $S^6 S^7$ are to be connected to the right and left hand main conducting-strips, respectively, of the chair, bath, bed, or table, as the case may be. It will be seen that a positive current
130 flowing to spring S^4 in the position of the pole-changer as shown in the drawings will flow over wire v to the spring S^6 and conductor E of the right-hand side of the chair, while the spring S^5 is connected through the wire v' to spring S^7 and the conducting-strip of the left-hand side of the chair. If, now, the cylinder

were partially rotated in the direction indicated by the arrow number 3, the springs S^4 and S^6 would break contacts with buttons x^2 and x' and make contacts with buttons x^5 x^6 , and the
5 springs S^5 and S^7 would break contact with buttons x^3 and x^4 and make contact with buttons x^7 and x^8 , and then the positive current would flow from spring S^4 to button x^6 , thence to button x^8 , spring S^7 , and the conductor E of the
10 left-hand side of the chair, while the return-current would flow from the conductor E of the right side of the chair to spring S^6 and button x^5 , and thence to button x^7 and spring S^5 , and back to the negative pole of the battery. Thus the direction of the current through
15 the upper part of the body may be reversed at pleasure. The springs S^6 and S^7 are respectively connected with the buttons 5 and 6 of a switch, K' , this switch being connected with
20 the electrode F of the left foot, while the electrode F' of the right foot is connected to the spring S^6 . By manipulating this switch a positive current or negative current, as desired, may be taken from one of the springs
25 S^6 or S^7 , whatever may be the position of the cylinder of the pole-changer.

I prefer that the various conductors and branch conductors be insulated by suitable wrapping or protective covering, such as is
30 commonly used for such purposes, and they may be concealed in a well-known manner by being let into the frame-work or located on the back of the same instead of the front.

Having now fully described my invention, I wish it to be understood that I do not confine
35 myself to the precise details of construction which I have shown, nor to the application of my invention to a chair, as it may obviously be applied to a table, bed, bath, or other article
40 adapted to receive the human body.

I am aware that chairs, baths, and other articles have been provided with conductors,

electrodes, and current-reversers for applying electric currents to the human body, and I lay no claim to such an apparatus, broadly. 45

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

1. In an electro-therapeutic apparatus, the combination, with the main conductors E E',
50 each provided with branch conductors and electrodes, of the springs S^2 and S^3 , forming terminals of said main conductors, the springs S and S', arranged for connection with the opposite poles of a battery, and the pole-changer
55 provided with connected pairs of buttons arranged to make contact with said springs and reverse the connection of springs S S' with
springs S^2 S^3 at will, substantially as described.

2. The combination, with the main conductors E and E', provided with branch conductors
60 and electrodes, the pole-changer, and suitable connections through the same from said main conductors to a battery, of the switch K, connected with one or more independent electrodes,
65 and conductors arranged to connect said switch with either one of the main conductors, as desired.

3. The combination, with the main conductors provided with electrodes for the upper portion
70 of the body, and a pole-changer arranged to reverse the connections of said main electrodes to a battery, of two or more electrodes for the feet and legs, and a suitable switch
75 arranged to regulate the circuit through the latter electrodes independently of the position of the pole-changer, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ELI H. THURSTON.

Witnesses:

CHARLES A. HUGHES,
JOSIAH SHIVELY.