

(No Model.)

S. FRANCE.

ELECTRO MEDICAL BATTERY.

No. 333,739.

Patented Jan. 5, 1886.

Fig. 1.

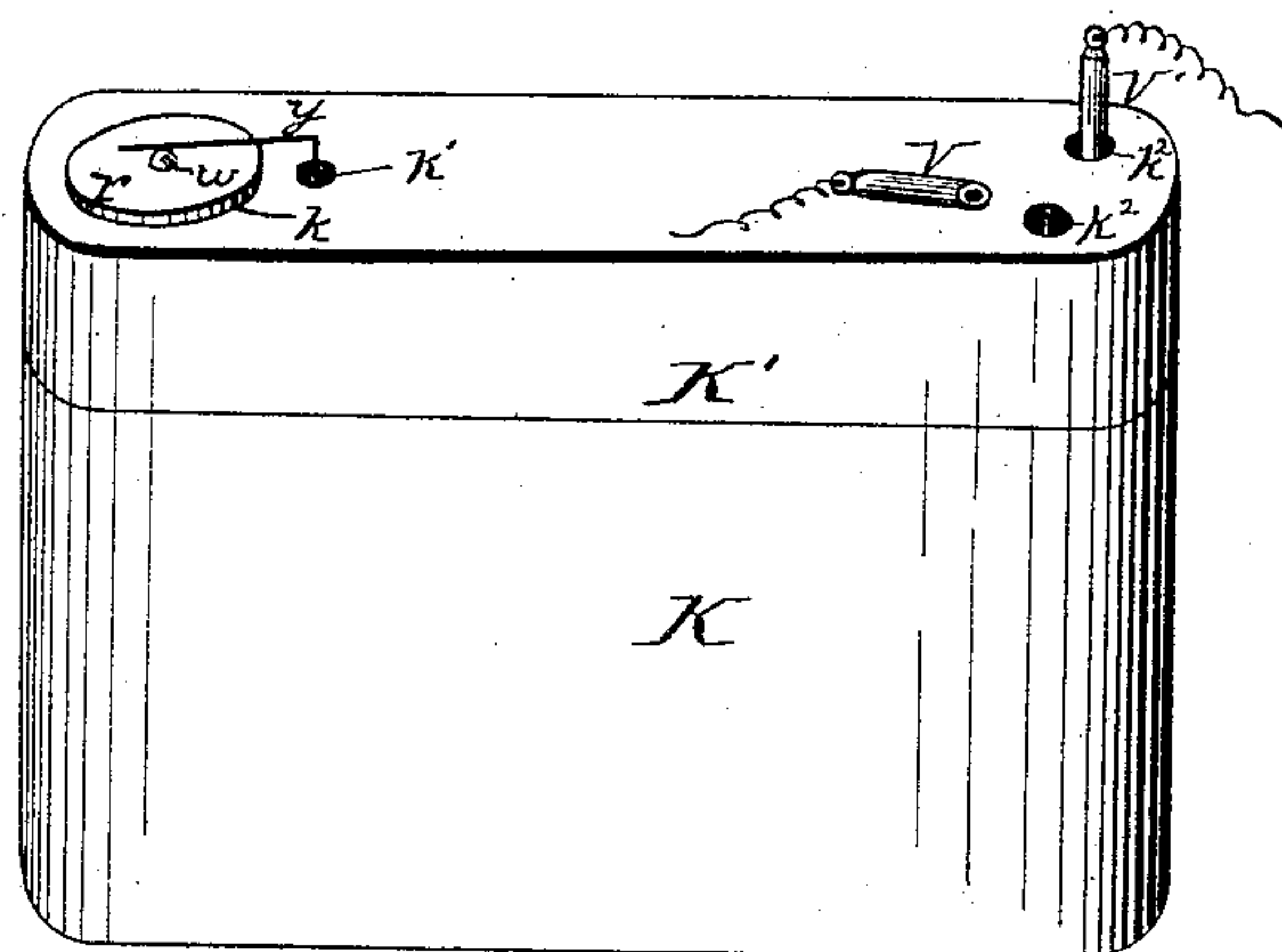


Fig. 2.

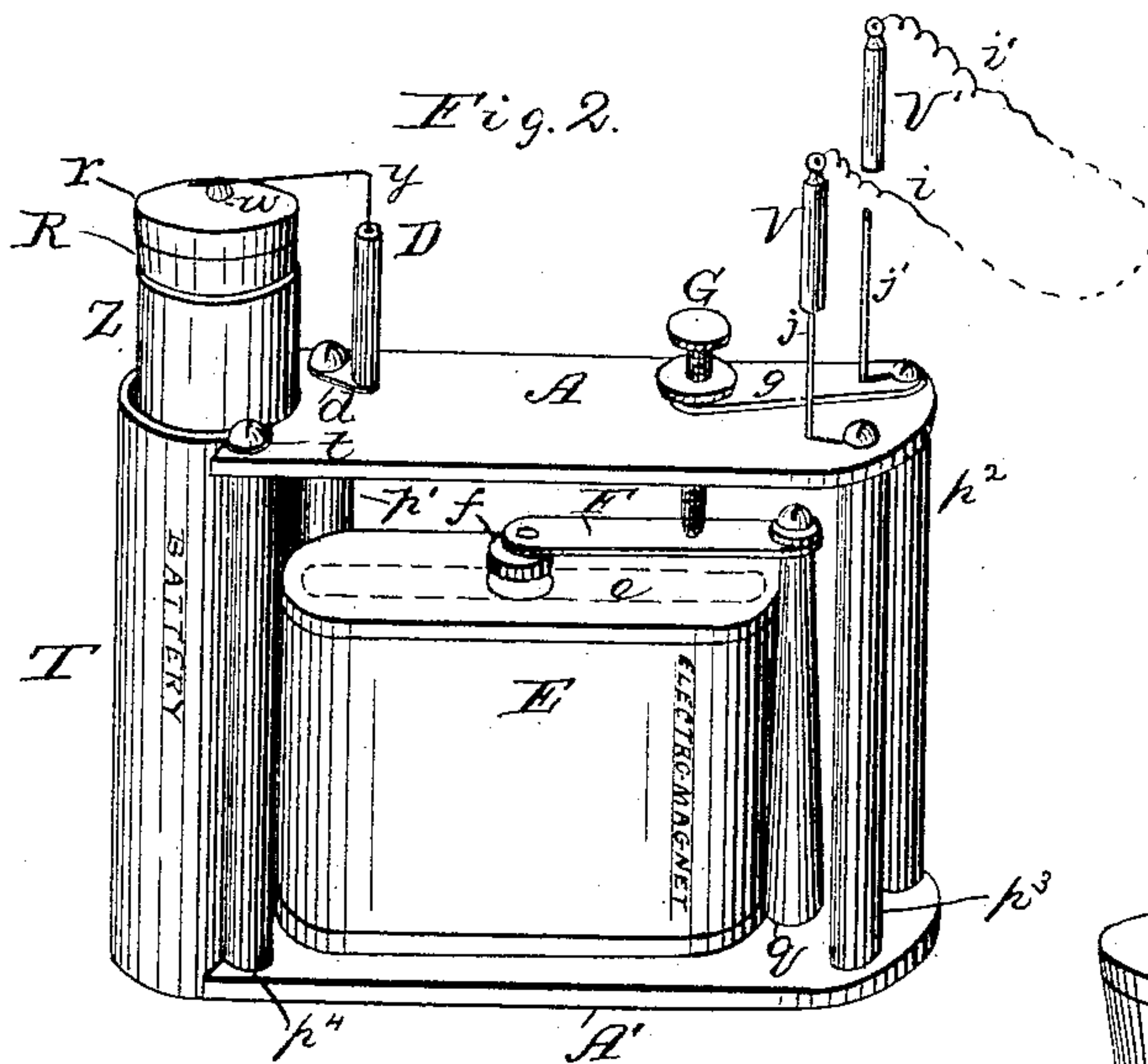


Fig. 3.

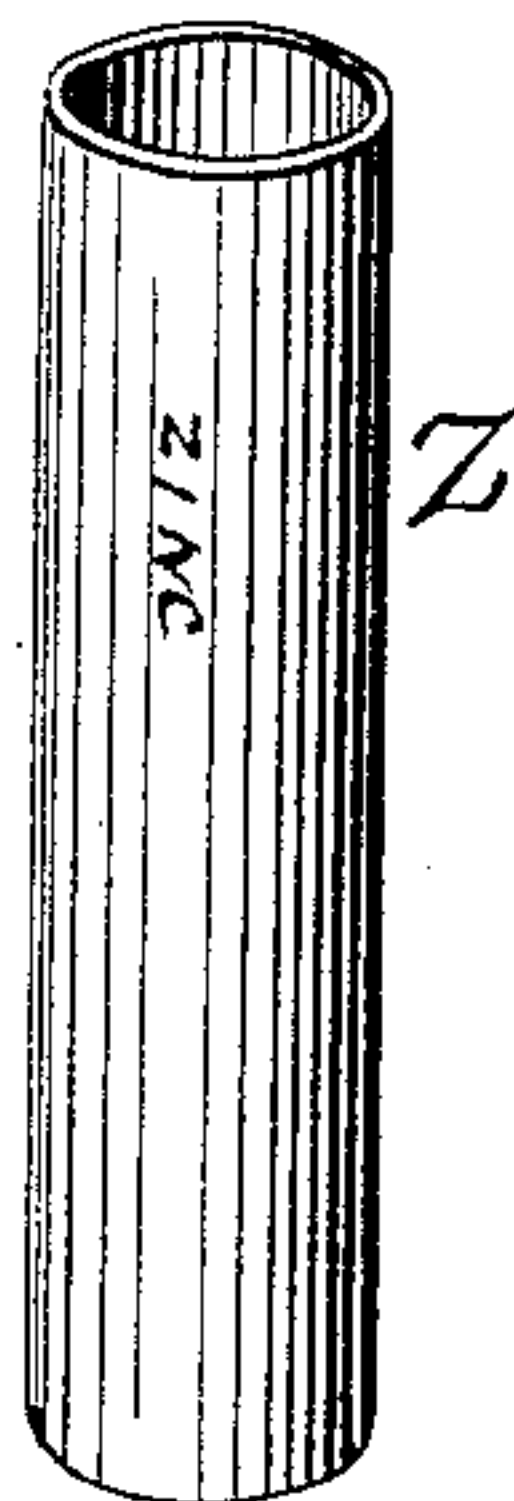


Fig. 4.

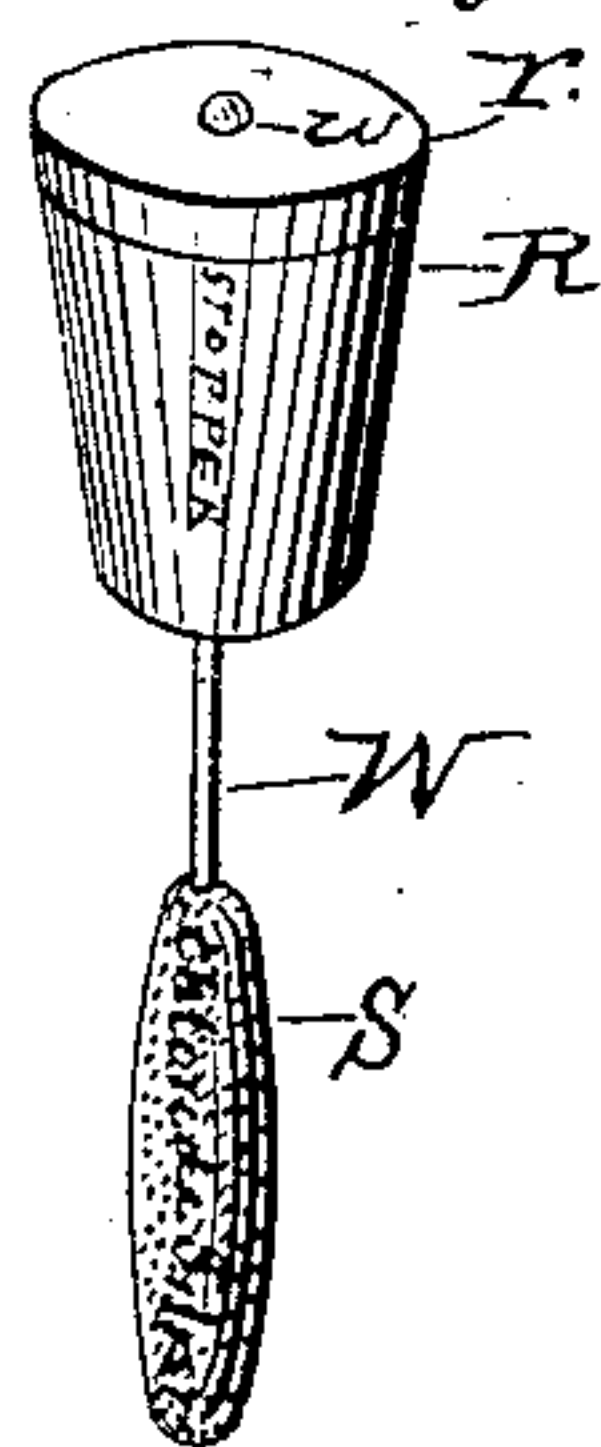
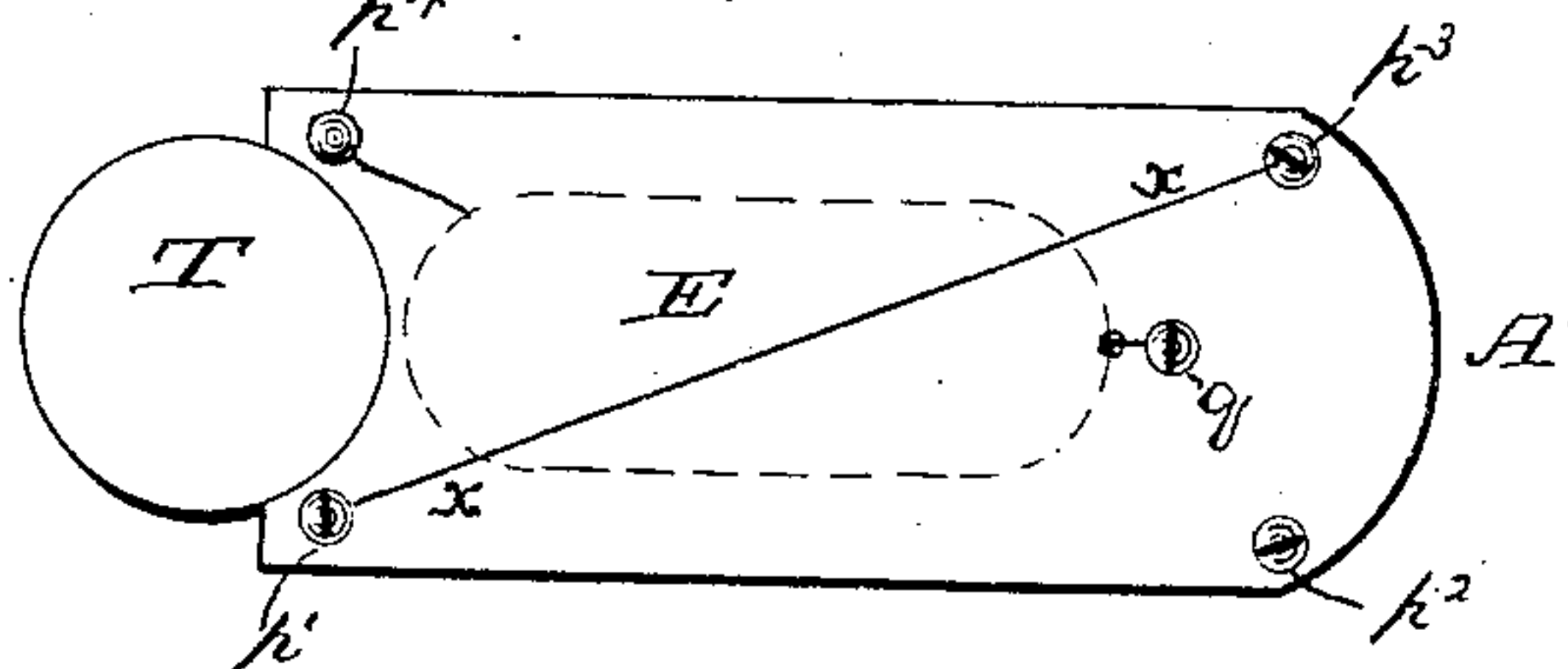


Fig. 5.



WITNESSES
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SAMUEL FRANCE, OF BOURBON, INDIANA.

ELECTRO-MEDICAL BATTERY.

SPECIFICATION forming part of Letters Patent No. 333,739, dated January 5, 1886.

Application filed March 19, 1885. Serial No. 159,445. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL FRANCE, a citizen of the United States, residing at Bourbon, in the county of Marshall and State of Indiana, have invented certain new and useful Improvements in Electro-Medical Batteries; and I do hereby declare the following to 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 the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to a generator of electric currents for therapeutic purposes; and it consists in a novel construction and combination of devices, which will be readily understood from the following particular description, in connection with the accompanying drawings, in which—

Figure 1 is a perspective view of my improved generator and its attachments inclosed in its casing. Fig. 2 is a similar view of the apparatus with its casing removed. Fig. 3 is a detached view of the positive element or zinc tube. Fig. 4 is a detached view of the negative element and its supporting-plug. Fig. 5 is a bottom view of the apparatus removed from its casing.

Referring first to Fig. 2, the letters A and A' indicate two plates of non-conducting material, preferably hard rubber, the plate A' being the base and the plate A the top plate of the supporting-frame of the apparatus. The two plates are connected by metallic posts p^1 , p^2 , p^3 , p^4 , and upon the base stands another metallic post, q . At one end of the frame is arranged a cylindrical tin vessel, T, open at its top and connected with the post p^4 by a small lip, t , through which passes a screw, the shank of which screws into the post, while its head clamps the lip.

Upon the base A' stands a flat electro-magnet, E, the flat soft-iron core e of which is wound with fine insulated wire, one terminal of which is connected with the foot of post p^1 , while the other terminal is connected with the post q . From the top of this post q extends laterally a metallic spring-arm, F, carrying at its end a small button-like soft-iron armature,

f , which lies directly over the core of the electro-magnet E, and its proximity to said core is regulated by an adjusting-screw, G, which passes through the top plate, A, and also through a metallic strip, g , lying on said top plate and held in position by the screw, which screws into the top of post p^2 . The spring-arm F and its armature form, in connection with the adjusting-screw, a rheotome for breaking the circuit, and thereby causing an intermittent current.

Inside of the cylindrical tin vessel T, and in contact with its bottom, fits a zinc tube, Z, and in the top of this zinc tube fits snugly a non-conducting plug, R, preferably of cork, and having a metallic cap, r . Through this plug and its metallic cap extends a silver wire, W, having a head, w , which is in contact with said cap. On that portion of the wire which extends below the plug is molded a small cylinder or other shaped mass of chloride of silver, S, which, when the plug is inserted in the zinc tube, forms the negative element of the battery of which the zinc tube is the positive element. The post p^1 is, by a wire, x , connected with post p^3 , the top of which is connected with an upwardly-projecting metallic pin, j , and a similar pin, j' , projects upward from the metallic strip g .

To the top of post p^1 is connected a small metal plate, d , from which projects upward a very small metallic tube, D, into which fits snugly one arm of a piece of wire, y , which is bent at a right angle, and has its other arm arranged to come in contact with the metallic cap r of the plug R, or with the head of the wire which rests on said cap.

V V' are small metallic sleeves, which fit snugly upon the pins j , j' , and each has attached to it an insulated wire or electric cord, as at i , i' , and to these cords may be connected any of the ordinary electrodes for application to the body.

As an exciting solution I use salt water, which is to be placed inside of the zinc tube in contact with it and the mass of chloride of silver, S, and a galvano-chemical action takes place which produces a strong electric current. The strength of the current may be regulated by varying the strength of the solution.

The action of the apparatus is as follows:

When the wire arm y is turned to contact with the metal cap r of the plug R , it is thus connected with the negative or silver element S of the battery. The current then flows from the positive pole, which is the head w of wire W , over bent wire y , tin tube D , metal plate d , post p' , wire x , post p^3 , pin j , sleeve V , which fits on said pin, conducting cord i , to one of the electrodes in contact with the body of the patient, thence through the body of the patient to the other electrode, and over conducting-cord i' , sleeve V' , pin j' , metal strip g , adjusting-screw G , spring-arm F , post q , the coil of magnet E , post p^4 , and lip t , to the vessel T and zinc tube Z , the small lip t being the negative pole of the battery. The tin tube T , which forms the casing of the galvanic elements, should be painted or coated with some suitable protecting material. As soon as the current begins to flow the core of the magnet E is energized and attracts the small armature f , so that the spring-arm F is drawn out of contact with the adjusting-screw G and the circuit is broken, so that the current ceases to flow, and therefore the core of the electro-magnet instantly loses its power, and the spring-arm F flies back to screw G and again completes the circuit, when the action of the spring-arm is repeated, and will continue to be repeated rapidly as long as the apparatus is connected up for action, the result being that the patient experiences a rapidly-intermittent current of electricity.

If it is desired to administer a continuous current, the adjusting-screw G may be screwed down, so that the spring-arm F cannot be drawn out of contact with it by the electro-magnet.

Usually the apparatus is to be kept inclosed by a casing, of which K is the main portion and K' the upper portion or lid. The lid K' has at one end of its top an opening, k , through which projects the metal cap r of plug R , and near this opening is a smaller opening, k' , through which the wire y may be inserted in the tube D , so that the horizontal arm of said wire may be brought in contact with the me-

tallic cap r . At the other end of the top of the lid are two small openings, $k^2 k^2$, through which the pins j and j' project to receive the sleeves V and V' .

The apparatus, when inclosed in its casing, has a flattened form and is well protected, so that it may be conveniently carried in the vest-pocket and have insulated wires or electric cords leading from it through the clothing to suitable electrodes, which may be applied to any desired portions of the body by means of belts or bandages, or by attachment to under-clothing. The casing is about three and a quarter inches long, two and a half inches high, and five-eighths of an inch wide, with rounded ends.

I do not limit myself to the exact proportions and construction of the apparatus as shown in my drawings, but may vary the same in any manner for better carrying out my invention without departing from the essential principle thereof.

I may apply the current from my apparatus by any known kind of conductors and electrodes placed and held in position by any suitable means which circumstances may suggest.

Having now fully described my invention and explained the operation thereof, I claim—

1. The combination of the non-conducting plates $A A'$, supporting-posts $p' p^2 p^3 p^4$, post q , spring-arm F , attached to said post, the flat electro-magnet E , the adjusting-screw, and the battery and circuit connections, substantially as described.

2. The apparatus constructed, as described, with the upwardly-projecting connecting-pins $j j'$, metal tube D , and metal cap r of the plug which supports the negative electrode, in combination with the casing having a lid with openings $k k'$ and $k^2 k^2$, for affording access to said parts, as set forth.

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

SAMUEL FRANCE.

Witnesses:

W. C. MATCHETT,
O. F. KETCHAM.