2 Sheets--Sheet 1.

A. J. STEELE.

Improvement in Electro-Magnetic Medical Apparatus.

No. 116,110. Patented June 20, 1871.

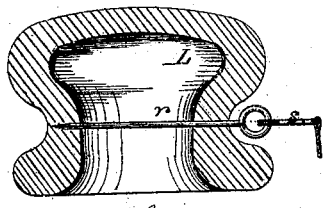


Fig. 4.

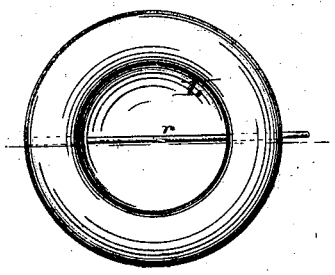


Fig. 5.

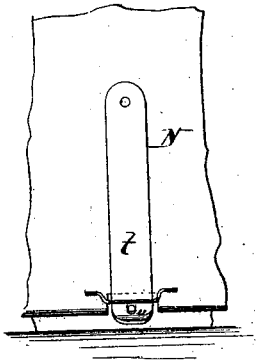


Fig. 6.

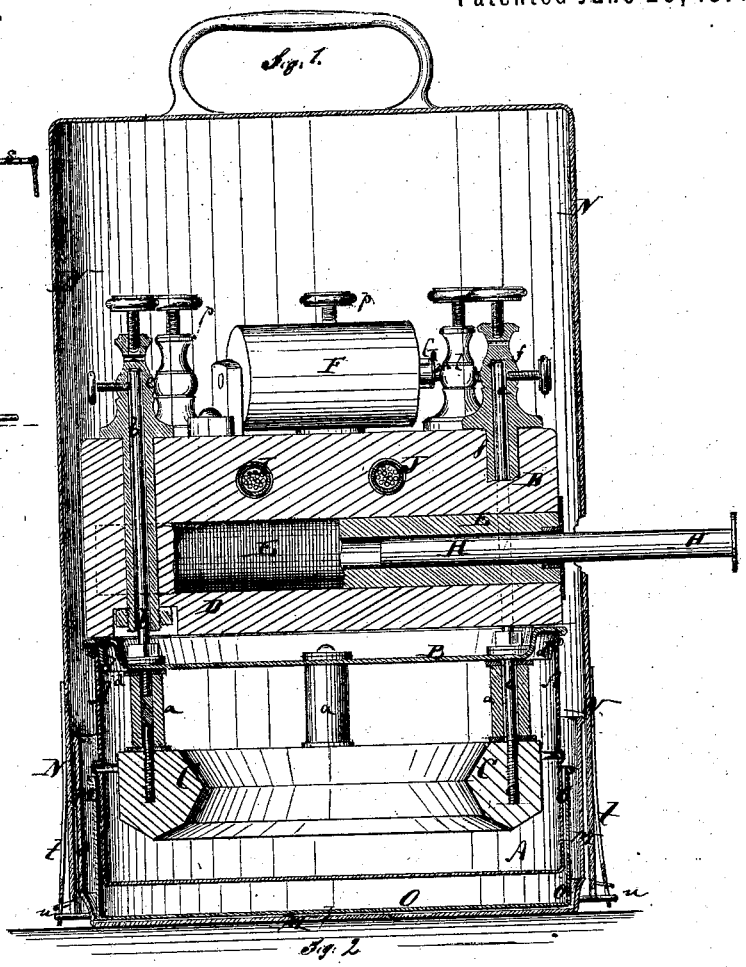
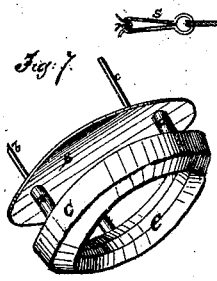


Fig. 2.

Fig. 1.



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2 Sheets--Sheet 2.

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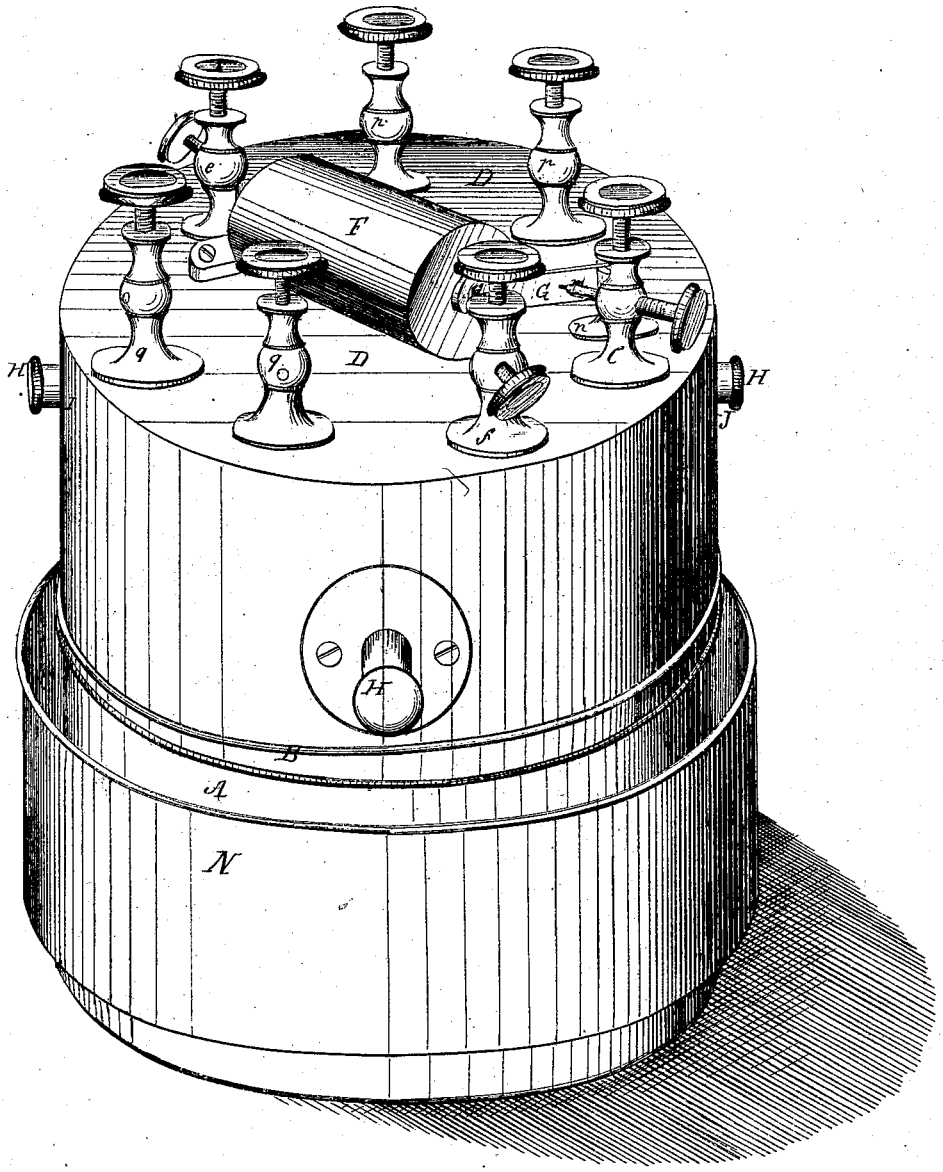
Fig: 8



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UNITED STATES PATENT OFFICE.

ALBERT J. STEELE, OF BBOOKLYN, NEW YORK.

IMPROVEMENT IN ELECTRO-MAGNETIC MEDICAL APPARATUS

Specification forming part of Letters Patent No. 116,110, dated June 20, 1871.

To all whom it may concern:

Be it known that I, ALBERT J. STEELE, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Electro-Medical Generator; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

Figure 1 represents a vertical section of my improved electro-medical generator taken on the plane of the line *x x*, Fig. 2. Fig. 2 is a plan or top view of the same without the protecting-case. Fig. 3 is a detail sectional view of the sponge-holder or handle. Fig. 4 is an end view of the same. Fig. 5 is a detail side view of part of the outer case, showing the fastening of the same. Fig. 6 is a detail side view of a spring-snap for fastening the conducting-wires; and Fig. 7, a detail perspective of the elements of the battery.

Similar letters of reference indicate corresponding parts.

This invention relates to several improvements in the arrangement of electric apparatus used for generating electrical currents which are to be applied to invalid and sick persons for healing diseases. The invention consists in an improved arrangement of the battery, binding terminals, and adjustable magnets, and in a novel general combination of parts, whereby a compact, safe, and portable apparatus is produced, as hereinafter more fully described.

A in the drawing represents a sheet-metal vessel of cylindrical form, open on top. It constitutes the cup of the generator. B is a cover, made of copper, brass, or other metal, for the cup A. From it is suspended into the bath, by isolated bars *a a*, the block of zinc *c*. The copper cover forms the positive and the zinc the negative element of the generator, rods *b c* projecting, respectively, therefrom into the upper instrument. By thus making the cover of the generator serve as one element a considerable amount of room is economized and the generator generally simplified. The cover also closes the bath so that its liquid contents cannot be spilled while conveying the apparatus. A flange, *d*, is preferably affixed to the cover for fitting tight against the inner side of the cup and closing the bath. The rods or wires *b c* enter a block, D, of wood or other non-conducting material, of cylindrical form, nearly the size of the vessel A. The tubular sockets of binding terminals *e* and *f*, respectively, receive the said rods. Whenever a primary current is required the cords which are connected with the electrodes are fitted directly to the binding terminals *e* and *f*. The positive rod *b*, or rather its metallic socket in the block D, is, by a wire, *i*, connected with a tubular coil of wire, E, which is fitted transversely into the block D. This coil connects, by a wire, *j*, with the electro-magnetic helix F, secured to the upper face of the block D. The negative rod *c* is, by a wire, *k*, connected with a post, *l*, in which a horizontal screw, *m*, is secured. This screw serves to regulate the vibrations of the spring armature G of the electro-magnet and to form electric contact with said spring, whose post or support *n* is, by another wire, *o*, connected with the helix. The proper connection is thus obtained. Terminals cups *p* and *q* connect with the coil E and receive the conductors to convey the currents to the patient. There is a pair of terminals, *p p* and *q q*, one of each kind being superfluous, except when the other gets out of order. The several wires above referred to are all indicated by dotted lines in Fig. 2. The intensity of the current is regulated by an adjustable magnetic piston or plug, H, placed within the coil E, and movable therein so as to magnetize a greater or lesser portion of the same. I have provided three such plugs, H, I, and J, of such various degrees of strength that, for different kinds of diseases or persons, the current can be regulated from a very low degree to one of extreme power. The surplus pistons are contained in transverse sockets provided for their reception in the block D. The conductors for connecting with the electrodes are to be covered with flexible non-conducting material so as to be insulated throughout their length, thus avoiding the unpleasant burning sensation produced when a non-insulated conductor is brought in contact with the body. The sponge-holder L is made of wood or other non-conducting material in form of a cup, as shown in Figs. 3 and 4, and receives a

pin, *r*, for holding the sponge in place and connecting with the conductor. A spring-snap, S, I prefer to use as a connection between the conductor and electrode, the same constituting a reliable fastening, which, however, will be released when a violent strain is brought on the conductor. The throwing down of the generator and spilling of acids is thus prevented. The bath-cup I prefer to put into another cup, M, slightly larger than A, to receive droppings therefrom, and at the same time afford protection to the cup A. N is a case, of leather or sheet metal, of cylindrical form and open at the lower end. It is to be put over the entire apparatus, and has perforated springs *t t* at the lower part, locking over pins *u u*, which project from the cup M. By means of a handle, V, on the case N, the whole apparatus can thus be carried in a convenient and compact form. A third cup, O, may be used to retain the electrodes, conductors, &c., while transporting the apparatus, and is, in that case, placed upon the terminals under the top of the case N. While using the device water may be put into the cup O for wetting the sponges, electrodes, &c.

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

1. The bath-cup A, combined with the cover B, which constitutes one element, and with the other other element, C, suspended therefrom, as set forth.

2. The combination, within and on the block D, of the coil E, rods *b c*, binding terminals *p q*, helix F, spring-armature G, and screw *m*, all arranged substantially as herein shown and described.

3. The adjustable magnets or plugs H I J of different strength, arranged in the electro-medical generator for producing currents of suitable strength, as set forth.

4. The case N, combined with the electric battery A and apparatus D for inclosing, and provided with spring *t* for supporting the same, as set forth.

5. The sponge or cup-holder L, provided with the pin *r*, and arranged substantially as shown and described.

6. The combination of the cup A, block D, cups M and O, and inclosing-case N with each other, all arranged to operate substantially as herein shown and described.

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