

(No Model.)

W. W. KARSHNER.

2 Sheets—Sheet 1.

ELECTRIC BATH.

No. 261,235.

Patented July 18, 1882.

Fig. 1.

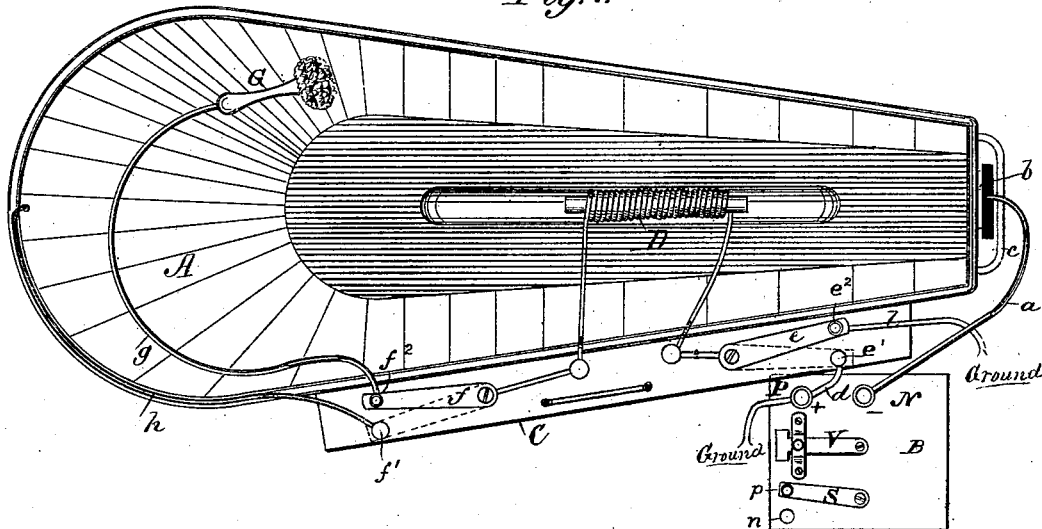
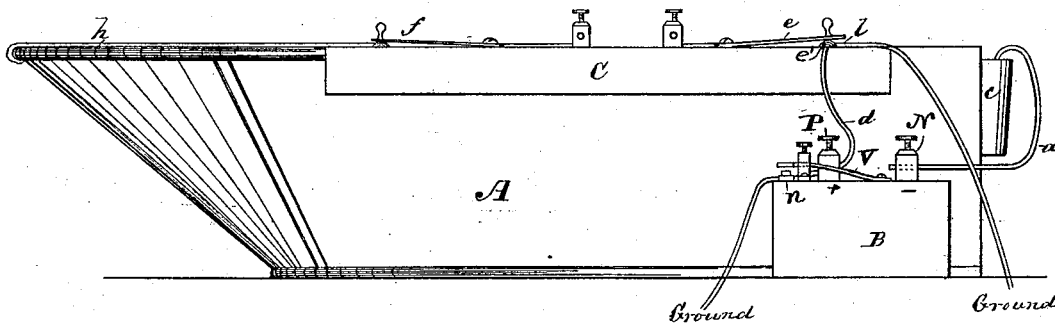


Fig. 2.



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(No Model.)

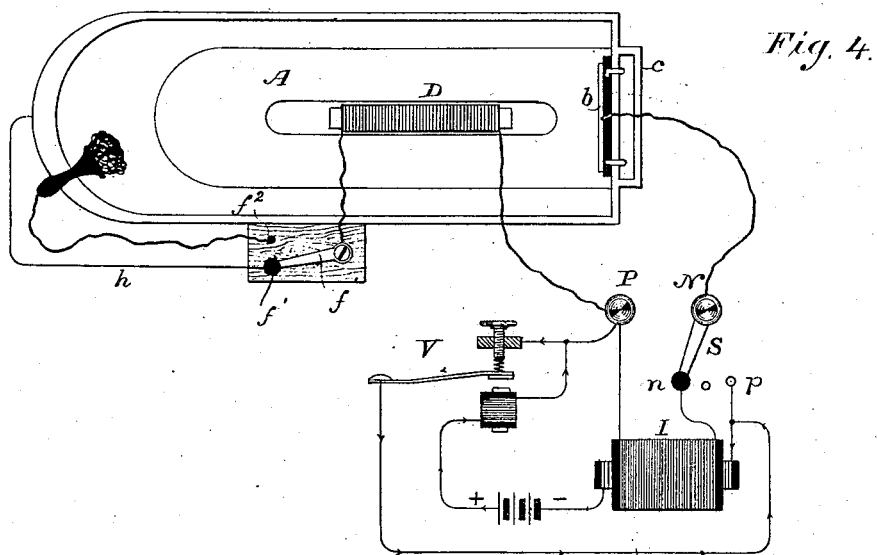
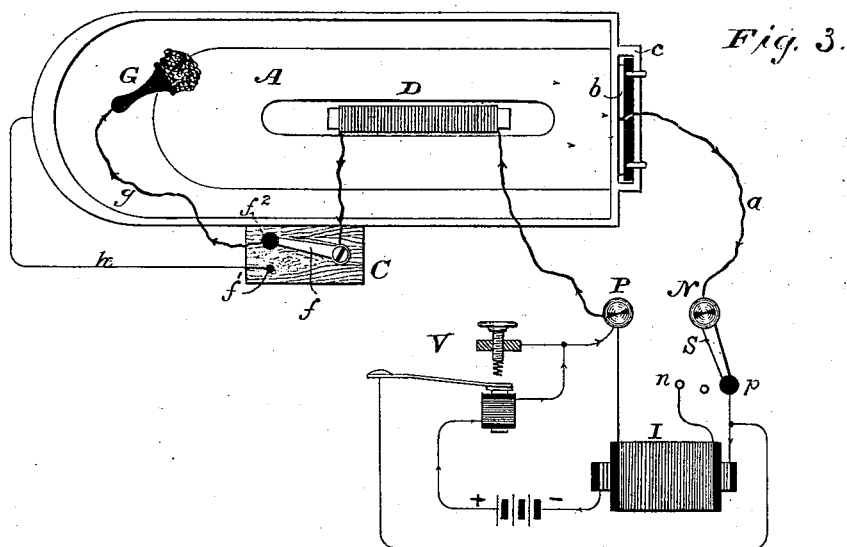
2 Sheets—Sheet 2

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WITNESSES

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# UNITED STATES PATENT OFFICE.

WILLIAM W. KARSHNER, OF WASHINGTON, DISTRICT OF COLUMBIA.

## ELECTRIC BATH.

SPECIFICATION forming part of Letters Patent No. 261,235, dated July 18, 1882.

Application filed August 3, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM W. KARSHNER, a citizen of the United States, formerly of Olathe, in the county of Johnson and State of Kansas, but now residing at Washington, in the District of Columbia, have invented an improved method of applying electricity as a remedial agent, and an improved electric bath-tub for so applying it, of which the following is a specification.

The efficacy in the use of electricity in many classes of diseases has long been known, and various devices for applying it have been devised.

In my own patent, granted to me in 1859, I have shown an electric bath-tub in which the patient is treated with a direct battery-current, first by means of a small positive contact—such as a sponge, for instance—with a large or diffuse negative contact, preferably the entire tub, and, second, with a small negative contact—such as a foot-plate—and a large or diffuse positive contact. In the organization in that patent, however, I was obliged to use two bath-tubs and transfer the patient from one to the other. The objection to such a plan will of course be obvious. Such a method of employing the currents I have found by experience to be very advantageous in many cases; but the action is not all that can be desired. I therefore make no claim herein to any such system of treatment or apparatus.

My present invention consists in treating the patient, while in the bath and in the magnetic field of a helix or electro-magnet, with a direct battery-current, and then with the secondary or to-and-fro current of an induction-coil, in the primary of which an ordinary automatic vibrator is placed, as is well understood.

The invention further consists in the employment of a helix or electro-magnet submerged in the bath, so that the patient, while in the tub, will be subjected to the action of the magnetic field or of the lines of force, which are well understood.

The details of the operation and apparatus of my invention will be fully set forth.

In the accompanying drawings, Figure 1 is a plan view of my improved bath-tub, showing the various electrical connections. Fig. 2 is a

side view. Fig. 3 is a plan view, with a diagram showing the circuits while the patient is being treated by the direct battery-current; and Fig. 4 is a similar view, showing the circuits when the patient is being treated with the secondary current of the induction-coil.

The bath-tub is preferably entirely of metal, and is properly insulated by wooden or rubber supports.

Referring first to Figs. 3 and 4, which show the organization most clearly, the bath-tub A is preferably provided with a groove or depression in the bottom, in which the straight electro-magnet D is placed. One end of the coil of this magnet is connected with the positive pole or post P of the battery, while the other is connected with a switch, *f*, on the side piece, C, of the tub. This switch may be moved so as to make contact with either one of two buttons, *f'* *f''*. One of the buttons, *f'*, is connected by wire *h* with the head of the bath-tub, and to the other is connected the sponge hand-piece G by wire *g*. The hand-piece is a non-conductor; but the sponge is in electrical connection with the wire *g*. The wires which will be in the water are covered with gutta-percha or otherwise suitably insulated, and preferably all the wire employed is so protected.

The negative pole of the battery N is connected by wire *a* with a plate, *b*, which is carried by a block of insulating material. This plate may be dropped into a pocket or hood, *c*, secured on the end of the tub. When in the pocket the plate is in contact with the metallic tub and the connection of the circuit is insured at that point. The plate may, however, be hung within the tub, as in Fig. 4, in which case there will be no electrical connection with the tub at that point.

It will be seen that both the primary and secondary wires of the induction-coil I are connected with the post P, and that the opposite ends of such wires are connected respectively to the contact-buttons *p* *n*, and that either of these buttons may be connected with post N by means of the switch S.

Referring now solely to Fig. 3, the tub being filled with water and the patient placed therein and the switches *f* and S respectively placed in contact with the contact-buttons *f'*

and *p*, the battery-current can be traced from the plus pole of the battery through the magnet of an ordinary spring-tongue vibrator, *V*, post *P*, submerged helix, switch *f*, wire *g*, to sponge in hand-piece *G*. The patient being in contact with the metallic tub, when the sponge is applied to any portion of his body the circuit will be completed through him and the tub, contact-plate *b*, post *N*, switch *S*, to primary wire of the induction-coil, back to the negative pole of the battery. This circuit is clearly shown by the little arrow-heads on the wires. When, now, the patient is touched with the sponge a direct positive battery-current passes in at the small point of contact, is diffused through the system, and passes out through the body like insensible perspiration, the circuit being completed through the water-tub and foot-piece back to the opposite pole of the battery. The action of such a current upon the human system has been demonstrated by long experience. It has been found, however, that baths of this character, while beneficial in improving the tone of and purifying the system, are very depleting, and the patient often rises from the tub in a very weak condition. To counteract this influence I make use of the secondary or to-and-fro current of the induction-coil. The arrangement for administering this current is clearly shown in Fig. 4, where it will be perceived that the foot-plate *b* has been suspended within the end of the tub, and that the switches *f* and *S* have been put in contact with the contact-buttons *f'* and *n*, respectively. The primary current can now be traced by the small arrow-heads, from the positive battery through the ordinary spring-tongue automatic vibrator, primary induction-coil, back to the negative pole of the battery. The secondary circuit runs from the secondary coil to post *P*, submerged helix, switch *f*, button *f'*, and wire *h*, to the head of the tub. The circuit is completed through the tub to the patient, who places his feet on the foot-plate *b*, to post *n*, back to induction-coil again. When the switches have been thus placed the battery-circuit will be immediately completed and will follow the circuit above described, the automatic vibrator constantly making and breaking the circuit. As is well understood, these makes and breaks produce in the secondary circuit induced currents or impulses of electricity alternately in opposite directions. The effect of this reverse or to-and-fro current upon the patient in the tub is very tonic and stimulating. The depleting effect of the direct battery-current is therefore counteracted. As is well understood, an electro-magnet or a helix through which a current of electricity is passing develops around it a magnetic field through which the lines of force are propagated. The patient is at all times within this field subject to its influence, which I have found by experiment to be very beneficial in many cases. The helix being submerged intensifies the effect of the magnetic field or lines of force upon the patient.

In Figs. 1 and 2 the battery, induction-coil, and their connecting-wires are all placed within a box, *B*, on the top of which are placed the switch-lever *S*, contact-buttons *p* and *n*, vibrator *V*, and binding-posts *P* and *N*. The operation is of course identical with that shown in Figs. 3 and 4, the current running from post *P*, wire *d*, through switch *e* in its dotted position, submerged helix, &c. In these figures, however, the switch *e*, which has not been shown in Figs. 3 and 4, can be placed in contact with either of the contact-buttons *e'* and *e''*. The contact-button *e''* is in connection with the ground by wire *l*. It will be seen that the positive pole *P* of the battery has a permanent ground-connection. The object of this arrangement is to take the direct current from the battery through the ground in case it should be preferred for any reason. When thus applied the circuit will run from the positive pole through the ground, wire *l*, switch *e*, and through the circuit back to the negative pole of the battery.

I have shown but one submerged helix; but should a greater magnetic influence be desired other helices in the same circuit may be placed in different parts of the tub in different relations to the body of the patient.

I have found that by the use of a submerged helix and by the method of treating a patient by subjecting him first to the direct influence of a battery-current and then to the stimulating and invigorating influence of an induced to-and-fro current while in the magnetic field of a helix very satisfactory results in the treatment of disease can be accomplished.

What I claim as my invention is—

1. The herein-described improvement in the method of applying electricity for remedial purposes, which consists in placing the patient in a bath and within the magnetic field of a submerged helix or electro-magnet placed in close proximity to the patient, and then subjecting him, first, to the influence of a direct battery-current, and, second, to the influence of a secondary or to-and-fro current, substantially as set forth.

2. The combination, substantially as herein set forth, of the battery, the primary and secondary wires of the induction-coil, an automatic vibrator in the primary circuit, the submerged helix or electro-magnet, which will be in close proximity to the patient, the bath-tub and hand-piece, the foot-plate, and the switches *f* and *S*.

3. The combination of a battery, an electric circuit, a bath-tub, and a submerged helix or electro-magnet so placed as to be in close proximity to the patient, substantially as and for the purpose set forth.

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Witnesses:

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