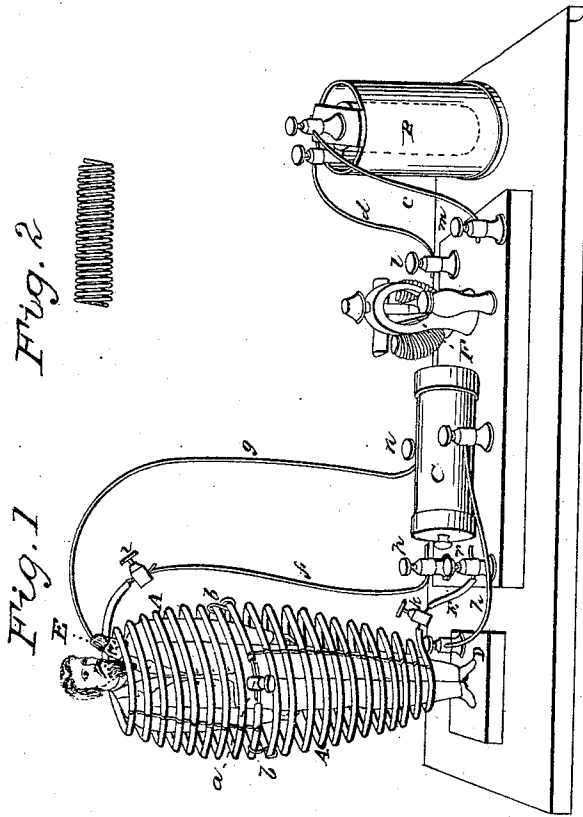


E. SMITH.

Electrode.

No. 96,044.

Patented Oct. 19, 1869.



Witnesses
C. L. Claus
Jerry King

Inventor
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per
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United States Patent Office.

ELIAS SMITH, OF NORMAL, ILLINOIS.

Letters Patent No. 96,044, dated October 19, 1869.

IMPROVEMENT IN GALVANIC APPARATUS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, ELIAS SMITH, of Normal, in the county of McLean, and in the State of Illinois, have invented certain new and useful Improvements in Galvanic Apparatus; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of a coil, for the purpose of conducting a current of electricity or galvanism around the whole or a part of the human body, to induce magnetism in the same; also, in combining the primary and secondary currents of a galvanic-battery, for the same purpose, in a greater degree than with the primary current alone.

In order to enable others skilled in the art to which my invention appertains, to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a perspective of my apparatus, showing the coil placed around the entire human body; and

Figure 2 is a side view of a smaller coil, applicable to the arm or leg.

The large coil, A, may be made of any good conductor of electricity or galvanism, but copper wire, No. 12 or 15, I consider the most appropriate. This wire should be covered by some non-conducting substance, to secure perfect insulation—silk or cotton thread will answer the purpose, if it is varnished after the wrapping.

The most convenient form for general treatment is to have the coil A made large enough in the centre to encircle the person, or part of the person to be operated upon. Yet the coil may be made of any size or shape necessary in any individual case.

The ends of the coil are made smaller than in the centre, yet sufficiently large for the head of the person to pass through at the upper end, and the feet at the lower end.

For further convenience in using, this coil A is made in two parts, fastened together at the centre in such a manner as to be easily separated. This is done by means of the thumb-screw connector *a*, and the two halves of the coil are sustained in their relation to each other, when in use, by the hooks *b b*.

The free ends of the wire that constitute the coil A may be attached direct to the battery B, by means of the conducting-wires *e f*, producing the primary current. But by applying a secondary current directly to the body while it is within the coil A, it so agitates the atoms or molecules of which the body is composed, that they easily become polarized by the primary current which is passing through the coil at the same time;

therefore, I use the combination shown in fig. 1. This consists of the coil A, battery B, and compound helix C.

The construction of a helix is well known, and needs but little explanation. It is composed of two coils of insulated copper wire, one wound over the other, but not connected. The inner or coarse wire conveys the primary or inducing-current, and is connected directly with the battery B, by means of the binding-posts *l m*, and the connecting-wires *c d*, the connecting-wires *e f*, from the coil A, connecting, at the binding-posts *p r*, to convey the primary current to the coil. The outer or fine-wire coil, conveys the secondary current, (that is induced by the breaking of and connecting the primary current,) and is given of at the binding-posts *n o* of the helix, and are connected with the two electrodes D E, by means of the wire conductors *g h*.

F is an automatic arrangement for interrupting the primary current, and is so well known as to need no description.

The primary current is a direct or one-way current, whereas the secondary current is to and fro, or alternating in its direction.

The operation is as follows :

Place the patient upon the metallic-plate electrode D, which is attached to one of the posts of the secondary current, at the helix C. Separate the large coil A at its centre, and slip the top part over the head of the patient, and let it pass down until the small or top part rests upon his shoulders. Then take the lower half, and bring it up over the feet and legs, until it meets the upper half of the coil; then fasten the middle ends with the thumb-screw connector *a* and the hooks *b b*.

Now attach the two ends of the coil A to the primary current binding-posts *p r* of the helix C, by means of the conducting-wires *e f* and the thumb-screws *i k*.

If it is desired to produce an exciting or stimulating effect, attach the positive pole *p*, of the primary current to the thumb-screw *k*, and the negative *r* to thumb-screw *i*. If it is desired to produce a soothing or quieting effect, attach the positive to *i* and the negative to *k*, as represented in the drawing.

Fasten the sponge-electrode E, by means of its connecting-wire *g*, to one binding-post of the secondary current *n*, the other post, *o*, being already attached to the plate-electrode D, at the feet.

Having everything now in working-order, and the secondary current graduated to the strength and feelings of the patient, pass the sponge-electrode E lightly over the face, neck, chest, and spine, for from five to fifty minutes, as the case demands.

If the patient is very sensitive to the secondary current, leave out the helix in making the circuit, and connect battery B and coil A direct, by means of the connecting-wires *e f*.

The number of battery-cups to be used with this apparatus will depend upon the case treated; but for ordinary use, three or four of Hill's local battery will be sufficient. This number may be increased to fifty or more in some cases. Any other suitable battery may be used in place of Hill's.

From the above, it will be seen that I am enabled to combine the primary and secondary currents, and make them useful in treating diseases.

The coil A may be made of any shape or size needed to surround or envelop the whole or any part or parts of the body to be operated upon, or constructed of any kind of insulated wire that is a good conductor of galvanism or electricity.

Having thus fully described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The coil A, constructed as described, for the purpose of conducting a current of electricity around the whole or a part of the human body, substantially as herein set forth.

2. The method herein described, of combining the primary and secondary currents of a galvanic or electric battery, for inducing magnetism in the living human body, by means of the coil A, battery B, helix C, and electrodes D and E, all constructed, arranged, and combined substantially as herein set forth.

In testimony that I claim the foregoing, I have hereunto set my hand, this 21st day of June, 1869.

ELIAS SMITH.

Witnesses:

THOS. SLADE,
W. M. HATCH.