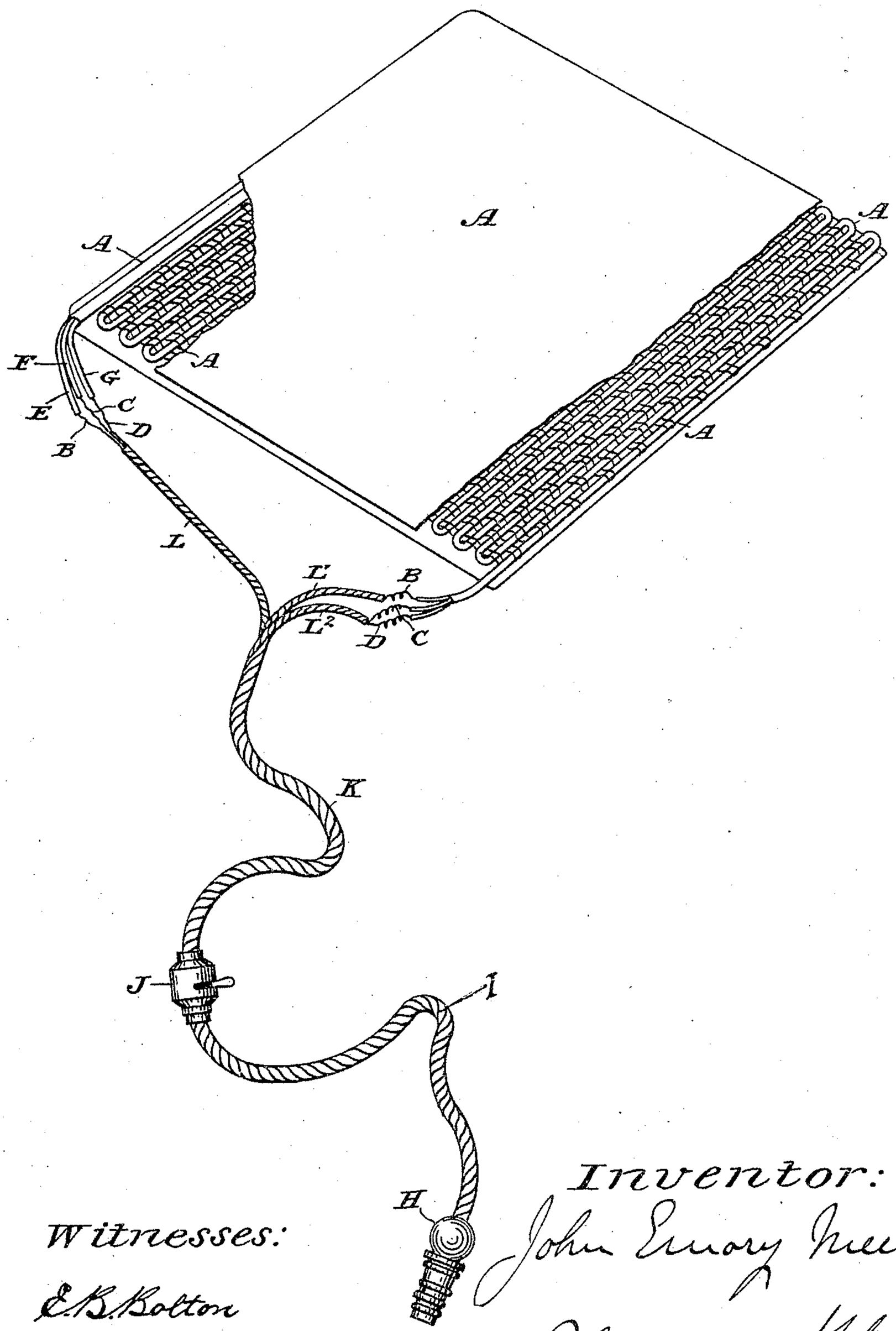
(No Model.)

J. E. MEEK.

ELECTRIC HEATER.

No. 574,745. Patented Jan. 5, 1897.



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ELECTRIC HEATER.

SPECIFICATION forming part of Letters Patent No. 574,745, dated January 5, 1897.

Application filed March 5, 1896. Serial No. 581,935. (No model.)

To all whom it may concern:

Be it known that I, JOHN EMORY MEEK, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented a certain new and useful Electric Heater, of which the following is a specification.

The invention relates to improvements in flexible electrical heating devices, having for its object more perfect regulation of the current caused to pass through the heater, whereby the use of a rheostat or regulator is avoided and also no loss of current is sustained.

It has heretofore been customary when necessary to regulate the amount of electrical energy or current passing into structures of the character of an electrical heating device to do so by what is known as "resistance" in some part of the circuit. This resistance is ordinarily called a "rheostat."

The function of a rheostat is to act as an obstruction to the passage of the electrical current, and the energy barred or dammed against passage is dissipated in heat, the result of which is that the rheostat becomes more or less heated, and in some cases and under some circumstances to a degree that makes manual manipulation impossible and renders it a source of danger, and, from an economical standpoint, it is obviously injudicious to generate energy that accomplishes no useful purpose and that can only be disposed of by a transformation into waste heat.

To overcome the difficulties and dangers attending the use of a rheostat, I have invented what I term the "multiwire system," by which I entirely obviate the use of a rheostat and utilize all the heat generated for a useful purpose.

The arrangement and combination are shown in the accompanying drawing, which represents a perspective of a heater, portions being broken away to show the running of the wires, the electrical connections, &c.

The drawing shows a heater made of woven material as a good example of the devices employed. Individual yarns or threads are not shown in the drawing, since such fabrics are now well known and do not require special detailed illustration.

A is the body of the heater, which need not be particularly described, because they are now comparatively well known. It comprises, generally stated, in the special example shown, a woven fabric, the warp-threads whereof are composed of asbestos or other suitable insulating and non-conducting material, and the filling-threads are composed of asbestos or other like material having continuous metallic wires or strands forming part of and woven with them. The fabric, as before set forth, is ordinarily inclosed within an exterior casing of suitable material which gives a finish and also additional protection and insulation to the same.

The invention consists in the method of disposing the conducting-wires throughout the entire area of the heating devices, whereby it may be raised throughout to substantially the same degrees of temperature.

The filling-threads have incorporated with them two, three, or more separated and insulated conducting-wires, which may be of the same or differing conducting capacity. They follow the course of the filling-thread and extend throughout substantially the length and breadth of the heater and are looped upon themselves at the selvages of the cloth, so that the fabric can be cut crosswise at any desired point to make a larger or smaller heater, and the ends of the wires at the place of cut, being brought out at the edge of the material, may connect with the circuit-wires, as desired. If the fabric be not a woven one, then the same disposition of the conductors will be made. Although there may be no selvage on such structure, nevertheless the wire will be looped at or near its edges, so as to effect substantially the same result.

In the drawing hereof I illustrate three separate wires B, C, and D, each of them inclosed in its separate insulating-wrapper, as shown at E, F, and G, made of asbestos or other non-conducting material, whereby they are insulated from each other. The three strands are woven together, forming the filling A of the fabric.

H is a contact-plug for making the connection with any suitable source of electrical supply.

I is a two-strand cable which connects the plug with any suitable switch J, as may be necessary.

K is a three-strand cable composed of the strands L, L′, and L². The strand L connects with the induction end of the heater, and all of the wires B, C, and D are inclosed within it, or connect with a conductor insulated by it. The strands L′ and L², however, connect with the eduction end of the heater, and one of them, L′, connects with the single wire B of the filling, and the other, L², connects with the two wires C and D of the filling. At the switch the contact-points are so arranged as that when the switch is in one position all of the wires will be cut out, and there will be no current passing through the heater. Upon turning it into another position the current will pass to the induction end of the heater through the cable L, but connections will be made at the eduction end of the cable L′ only, and when the switch is moved into another position the current will pass, as before, to the induction end and contact will be made at the eduction end with the cable L², and when the switch is in still another position the current will pass, as before, to the induction end, and connection will be made with both of the eduction-cables L′ and L².

The operation is as follows: The current passes from the source of supply through the plug and the cable I to the switch, and if it be turned off then no current passes to the heater. When desiring a moderate heat, the switch is so turned as that the single wire B will be in circuit. It alone then acts as a heating means, the other wires C and D being inert. If a greater heat is desired, then the switch is so turned as that the circuit is made through the wires C and D, cutting out the previous circuit through B, but, if the maximum heat is desired, then the switch is again manipulated, so that all three wires B, C, and D are in circuit.

It will be readily understood by those who are familiar with this art that the foregoing is one form only in which the improvement may be constructed. There may be any preferred number of insulated conducting-wires made in the heater, the necessary contacts at the switch being supplied, and it will be particularly noted that under the invention each one of the conductors, irrespective of their conducting capacity, is to extend to substantially all parts of the heater and that they are to be located in substantially the same plane. In this way substantial uniformity of temperature throughout the entire structure is secured, although the degree of heat will differ, depending upon the circuits which are in operation.

Having described the invention, I claim—

The combination in an electric heater, the body of which is made of flexible, insulating and non-conducting material, of two or more continuous and separately-insulated conductors, in substantially the same plane, each of which extends to substantially all parts of the heater, and woven into the fabric thereof, and induction and eduction current-conveyers, for the purposes set forth.

Signed at New York, in the county of New York and State of New York, this 3d day of March, A. D. 1896.

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Witnesses:

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