

Improved means for applying electricity to the human body.

Contributors

Gibbs, John Wilson

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Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
<https://wellcomecollection.org>

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PROVISIONAL SPECIFICATION.

Improved Means for Applying Electricity to the Human Body.

I, JOHN WILSON GIBBS, of 1370 Broadway, New York, State of New York, U.S.A., Physician, do hereby declare the nature of this invention to be as follows:—

This invention relates to appliances used for invigorating or restoring to health the human system by means of a gentle continuous or faradic or interrupted current of electricity, and particularly to electric rollers or other devices for therapeutical or massage purposes, whereby said currents can be administered without any manipulation or attention whatever except the ordinary use of the articles; and it has for its object the provision of an appliance of the kind set forth, simple in construction, inexpensive to manufacture, and which combines compactness of structure and light weight and also increased efficiency in practical operation.

It is well known that when the current is rising in an electric circuit the number of lines of magnetic force passing through it is on the increase. Hence an electromotive force is generated which opposes that of the battery and causes the current to rise slowly. Again, when the current begins to decrease the number of lines of force begin to decrease and an electromotive force of induction is called forth, which tends to prolong the current. This weakening of the electromotive force at starting and exaltation at stopping I utilize in my appliance, and I heighten such inductive effects by winding the current conveyer in a spiral or helical form, as a helix without a core, or by the use of electromagnetic devices. I have therefore constructed according to my invention an organization of the class described whereby nutrition is re-established and vitality restored and tone is given to the blood and tissues and exhausted nerve force is renewed, embodying the preferred construction of parts and their mutual relationship, combination, arrangement, and organization in a composite body or structure, as hereinafter described.

In carrying out my invention which I will describe as applied to a massage roller, I provide an electric roller shell or contact-face portion, which is preferably made in one piece and cylindrical in form, the ends of the same being provided with heads constructed of insulating material. Through the centre of the said heads is passed a horizontal bar provided with fastening means, as a knob or nut located at one end and having a screw-threaded portion at the other extremity, which may be engaged by a preferably milled nut. The bar is preferably constructed of material capable of being magnetized and is supported at each end by the upper part of the handle, consisting ordinarily of a bifurcated holder provided with a vertical depending portion constructed and arranged to be engaged with the body of the handle. In the roller I locate means for generating electricity, as a galvanic battery provided with two elements. The parts are so arranged that when the roller is rotated one of the elements, which is of a yielding nature, will be periodically impacted with a projecting portion of the bar, thus making and breaking the circuit at intervals. I also locate in the roller current conveying means wound in convolutions, whereby the electromotive force of induction, by which the current is weakened at starting and exalted at stopping is heightened by the current conveyer being wound in a spiral or helical form, one end of the coil being connected with the second element, which is of an

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Gibbs' Improved Means for Applying Electricity to the Human Body.

unyielding nature, and the other end of the coil being in contact with the shell. The depending portion of the holder inserted in the handle-body is in electric connection with a primary wire of an induction coil, which is also connected with a metal band and the secondary wire of the induction coil, which latter is also in connection with another insulated metal band, the said bands and induction coil being preferably 5 located in the handle body. When the roller is rotated, the circuit of the battery will be completed and broken by the bar and the yielding element, the current passing from the first mentioned band to the hand of the operator, thence through the body of the user to the shell. In addition to the battery current and the inductive effects of the lines of magnetic force an additional induction current is 10 obtained from the induction coil, the secondary coil being connected with the primary coil and with the second metal band.

Manifestly my appliances may be utilized to administer either a gentle continuous current or an interrupted or intermittent current, or both. When used in connection with a rheotome or interrupter, especially when an induction coil is inserted in the 15 circuit, each impulse of the electric current causes a mild shock or contraction of the muscular tissues, succeeded with a distinct interval by a momentary sensation or flow of heat, due to the electric and nervous polarization of the circuit. On opening the circuit again the depolarization of the tissues which ensues is accompanied by a second shock and subsequent flow of heat, which is powerful in proportion to the length of 20 time the circuit has remained closed.

In an alternative construction, one head of the roller shell may consist of metal, and the yielding element of the battery supported by the bar may be connected with a wire projecting from the insulated head of the shell and provided with radial pro- 25 jections, which, with a spring finger, serve to form a rheotome or interrupter. In this instance the insulated spring is connected with one wire of the primary induction coil, and the holder is in electric connection with the other wire of the said coil. The unyielding element and the shell are connected as before in the previously described construction, by the coil. The secondary coil is connected with the primary 30 coil and also with the metal band on the handle the whole apparatus forming a complete but mild medical battery.

In both of these examples of my electric roller, the shell and the metal portion of the handle form the electrodes of the battery, which may be of any approved form of construction. In these appliances which manifestly may be constructed very 35 inexpensively, a gentle current of electricity is generated of sufficient strength to be measured by the proper electrical measuring instruments. It will be observed that where a rheotome is used the action of the same is automatic—i.e., the make and break is made by the ordinary use of the appliance and does not require an independent self acting or otherwise actuated device. In cases where a very gentle current is desired the induction coil in the handle may be dispensed with, or where a still 40 milder current is desired, the coil in the shell may be omitted.

Obviously other devices for generating direct currents or creating or increasing induction currents by means of current conveying means wound in convolutions and constructed and arranged to be rotated by the revolution of the roller,—as, for 45 instance, any well known form of electro-magnetic armature coil—may be substituted for the coil and battery in the shell, for example—the roller shell may be provided with two insulated heads. The bar serves in this instance to support a U-shaped part constructed of a material capable of being magnetized and carrying two coils connected together and also with a commutator. One end of the holder supports a horse-shoe magnet, and two springs are respectively connected with the holder and 50 shell. The roller also preferably carries a battery, the elements of which are respectively connected with the holder and shell through a coil. A handle and a therein contained induction coil may be used in connection with the holder.

It will be noticed that in my device for applying electricity the electricity is generated when the roller shell is moved around its axis by mechanical means— 55 namely by the closing and interruption of the circuit by the periodical engagement of the two members of my electricity generating system—namely the projecting por-

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tion of the preferably magnetized bar with the battery element—and secondly by the closing and interruption of the circuit by the magnet, the electromagnet, and the commutator.

Various omissions of some particulars could be made without materially affecting the essential features of my invention or the operation of the remaining parts, and I do not therefore wish to be limited to the specific structural details described.

In practical use the handle of my electric roller is grasped by the hand, and the roller is applied to the particular portion of the body desired to be treated, the current passing from the hand through the body to the part in contact with the roller.

Dated this 16th day of October 1902.

P. R. J. WILLIS,
Agent for Applicant.

COMPLETE SPECIFICATION.

15 **Improved Means for Applying Electricity to the Human Body.**

I, JOHN WILSON GIBBS of 1370 Broadway, New York, State of New York, U.S.A., Physician, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement :—

20 My invention relates to appliances used for invigorating or restoring to health the human system by means of a gentle continuous or faradic or interrupted current of electricity, and particularly to electric rollers or other devices for therapeutical or massage purposes, whereby said currents can be administered without any manipulation or attention whatever except the ordinary use of the articles; and it
25 has for its object the provision of an appliance of the kind set forth, simple in construction, inexpensive to manufacture, and which combines compactness of structure and light weight and also increased efficiency in practical operation.

To attain the desired end, this my invention consists in the construction, arrangement and operation of parts herein set forth.

30 In order to enable my invention to be fully understood I will proceed to explain the same by reference to the drawings which accompany and form a part of this Specification, in which—

Figure 1 represents a central longitudinal section of an electric roller constructed according to my invention. Fig. 2 is a central vertical section of said roller, taken
35 on the line 2—2, Fig. 3. Fig. 3 is a central longitudinal section of another of my electric massage rollers. Fig. 4 is an end elevation of the said roller. Fig. 5 is a central longitudinal section of another roller constructed according to my invention. Figs. 6 and 7 are sectional views in detail, taken, respectively, on the lines 6—6, and 7—7 of Fig. 5. Fig. 8 is a section on line 8—8 of Fig. 1.

40 Like letters of reference indicate like parts in all the views.

It is well known that when the current is rising in an electric circuit the number of lines of magnetic force passing through it is on the increase. Hence an electromotive force is generated which opposes that of the battery and causes the current to rise slowly. Again, when the current begins to decrease the number of lines of
45 force decrease and an electromotive force of induction is called forth, which tends to prolong the current. This weakening of the electromotive force at starting and exaltation at stopping I utilize in my appliance, and I heighten such inductive effects by winding the current conveyer in a spiral or helical form, as a helix without a core, or by the use of electromagnetic devices. I have therefore constructed according to
50 my invention an organization of the class described whereby nutrition is re-established and vitality restored and tone is given to the blood and tissues and exhausted nerve

Gibbs' Improved Means for Applying Electricity to the Human Body.

force is renewed, embodying the preferred construction of parts and their mutual relationship, combination, arrangement and organization in a composite body or structure, as hereinafter described.

Referring particularly to the drawings, which shew my invention applied to a massage roller. A denotes my electric roller shell or contact face portion, which is preferably made in one piece and cylindrical in form, the ends of the same being provided with heads a , constructed of insulating material. Through the centre of the said heads is passed a horizontal bar B, provided with fastening means, as a knob or nut, located at one end and having a screw-threaded portion at the other extremity, which may be engaged with a preferably milled nut b . The bar B is constructed of a material capable of being magnetized and is supported at each end by the upper part of the handle, consisting ordinarily of a bifurcated holder C, provided with a vertical depending portion constructed and arranged to be engaged with the body of the handle D. I locate in the roller A means for generating electricity, as the galvanic battery E, comprising the elements e e^1 and a suitable excitant or oxidising liquid, the shell being made liquid-tight to retain the excitant. The parts are so arranged that when the roller A is rotated the element e^1 which is yieldingy mounted within the shell, will periodically be impacted with a projecting portion or short projections e^{11} of the bar B, thus making and breaking the circuit at intervals. I also locate in my roller current conveying means wound in convolutions, whereby the electromotive force of induction, by which the current is weakened at starting and exalted at stopping is heightened by the current conveyer being wound in a spiral or helical form as at F, one end of the coil being connected with the element e and the other end of the coil being in contact with the shell A. In the other direction the current passes from the element e^1 to the bar B and thence to the holder C the depending portion of which is inserted in the handle body D and is in electric connection with the primary wire G of an induction coil which is also connected with the metal band H¹ and the secondary wire G¹ of the induction coil, which latter is in electric connection with the metal band H, the said bands and induction coil being preferably located in the handle body D. When the roller A is rotated, the circuit of the battery E will be completed and broken by the bar B and element e^1 , the current passing from the element e^1 through the bar B, the holder C, and the wire G to the band H¹, and thence through the hand and body of the operator to the shell A. In addition to the battery current and the inductive effects of the lines of magnetic force an additional induction current is obtained from the induction coil G G¹, the secondary coil being connected with the primary coil and with the metal band H.

Manifestly my appliance may be utilized to administer either a gentle continuous current or an intermittent or interrupted current, or both. When used in connection with a rheotome or interrupter, especially where an induction coil is inserted in the circuit, each impulse of the electric current causes a mild shock or contraction of the muscular tissues, succeeded with a distinct interval by a momentary sensation or flow of heat, due to the electric and nervous polarization of the circuit. On opening the circuit again the depolarization of the tissues which ensues is accompanied by a second shock and subsequent flow of heat, which is powerful in proportion to the length of time the circuit has remained closed.

In the electric roller shewn in Fig. 3, one head A¹ of the roller shell A may consist of metal, and the element e^2 , supported by the bar B¹, may be connected with a wire projecting from the insulated head a^1 of the shell A and provided with radial projections e^3 , which, with the spring finger J, serve to form a rheotome or interrupter. In this instance the insulated spring J is connected with one wire of the primary induction coil G and the holder C is in electric connection with the other wire of the said coil. The element e and the shell A are connected as before, by the coil F. The second coil G¹ is connected with the primary coil G and also with the metal band H², the whole apparatus forming a complete but mild medical battery.

In both of these examples of my electric roller described, the shell A and the metal portion of the handle form the electrodes of the battery, which may be of any

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approved form or construction. In these appliances, which manifestly may be constructed very inexpensively a gentle current of electricity is generated of sufficient strength to be measured by the proper electrical measuring instruments. It will be observed that where a rheotome is used the action of the same is automatic—i.e., the make and break is made by the ordinary use of the appliance and does not require an independent self-acting or otherwise actuated device. In cases where a very gentle current is desired the induction coil in the handle may be dispensed with, or where a still milder current is desired the coil in the shell A may be omitted.

Obviously other devices for generating direct currents or creating or increasing induction currents by means of current conveying means wound in convolutions and constructed and arranged to be rotated by the revolution of the roller,—as, for instance, any well known form of electro-magnetic armature coil may be substituted for the coil F, and battery E, I show; as, for example—in Fig. 5 the roller shell A, is provided with two insulating heads a^2 and a^3 . The bar B^1 serves in this instance to support a U shaped part K, constructed of a material capable of being magnetized, and carrying two coils k , connected together and also with the commutator L. One end of the holder C supports a horseshoe magnet O, and the two springs M, N, are respectively connected with the holder C and shell A. The roller A also preferably carries a battery E, the elements e and e^1 of which are respectively connected with the holder C and shell A through coil F. A handle and a therein contained induction coil (not shewn) may be used in connection with the holder C, as represented in Figs. 1 and 3.

It will be noted that in my device for applying electricity the electricity is generated when the roller shell is moved around its axis by mechanical means—namely as in Fig 1, by the closing and interruption of the circuit by the periodical engagement of the two members of my generating system—namely the projecting portion of the magnetized bar B with the battery elements e e^1 —and in Fig 5 by the closing and interruption of the circuit by the magnet O, electro-magnet K k , and commutator L.

It is manifest that various omissions of some particulars could be made without materially affecting the essential features of my invention or the operation of the remaining parts, and I do not therefore, wish to be limited to the specific structural details of the organization herein set forth.

Obviously the elements of the structure described may be located at an angle to the plane in which they are shewn. I accordingly use the words “horizontal”, “vertical” and the like in a relative sense.

The special utility of this system lies in the fact that while electricity is known to be a cure for various ailments it is also possible by a slight faradic current applied morning and evening to the face, neck or shoulders or other parts of the person to nourish the body and greatly improve the complexion, the application of the current for this purpose being natural and based on the simplest laws of electrical and physiological effect. The modification of the muscular tissue produced by this means is said to be primarily the result of the influence of the current upon the nerves, both in their movement and in their nourishment, the healthfulness of the skin following an improved condition of the blood, and the increased flow of the latter involving augmented nourishment and capacity to eliminate deleterious matter.

In practical use the handle of my electrical roller is grasped by the hand, and the roller is applied to the particular portion of the body desired to be treated, the current passing from the hand through the body to the part in contact with the roller. The electric current administered by my roller, which stimulates the circulation and tones up the muscular structure, does not give a heavy shock nor does it have the pricking, burning disagreeable sensation that follows the use of the ordinarily very powerful medical battery, and the cylinder may be rolled over any part of the face or body at the discretion of the user, the application of my roller being not only painless but also effectual for muscle and tissue building. By the use of this application of my invention it will be seen that the combined benefits of the

Gibbs' Improved Means for Applying Electricity to the Human Body.

ordinary massage roller and the application of self-produced electric currents are secured.

Obviously my invention may be embodied in other forms of mechanism than that which I have described and is applicable to and may be advantageously employed in many kinds of electrical appliances, and I do not, therefore, wish to limit myself to the use of my device in connection with electric massage rollers alone.

As it is evident that many changes in the form, proportion, construction and relative arrangement of parts may be resorted to without departing from the spirit and scope of my invention, I would have it understood that I do not restrict myself to the particular construction and arrangement of parts shewn and described, but that such changes and equivalents may be substituted therefor.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

1. In a device for applying electricity, the combination of a hollow roller shell, a handle therefor, and means for generating a current of electricity within said roller shell, and also means for connecting the said electricity generator with the shell, and an induction coil located in said handle.

2. In a device for applying electricity, the combination of a roller, a handle therefor, and means for generating electricity mechanically, said electricity generating means being constructed and arranged to be operated by the motion of the roller, and an induction coil located in said handle.

3. In a device for applying electricity, the combination of a hollow roller shell, a handle therefor, and means for generating a current of electricity within said roller shell, and also means for connecting said electricity generating means with the shell, and an induction coil located in said handle.

4. In a device for applying electricity, the combination of a roller, a handle therefor, and means for generating a series of induced currents of electricity mechanically, contained within said shell, said electricity generating means being constructed and arranged to be operated by the motion of the roller, and an induction coil located in said handle.

5. In a device for applying electricity, the combination with a movable roller shell, and a handle therefor, of a relatively stationary part forming one member of the electricity generating system, and of another member of the generator of electricity secured to said shell, to cause the operation of the generator of electricity by the motion of the roller, and an induction coil located in said handle.

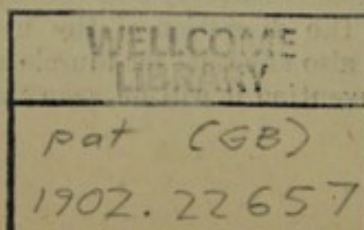
6. In a device for applying electricity, a roller, a handle therefor, a coil of wire contained within the roller and means to set up in said coil an induced current of electricity by the motion of the roller, and an induction coil located in said handle.

7. In a device for applying electricity, the combination of a roller and a handle therefor, and a coil of wire located adjacent to the roller, and means to set up a series of induced currents of electricity in said coil by the motion of the roller, and an induction coil located in said handle.

8. In a device for applying electricity, a roller, a handle therefor, a coil of wire, and means to set up in said coil an induced current of electricity by the motion of the roller, and an induction coil located in said handle.

Dated this 18th day of July 1903.

P. R. J. WILLIS,
Agent for Applicant.



[This Drawing is a reproduction of the Original on a reduced scale.]

