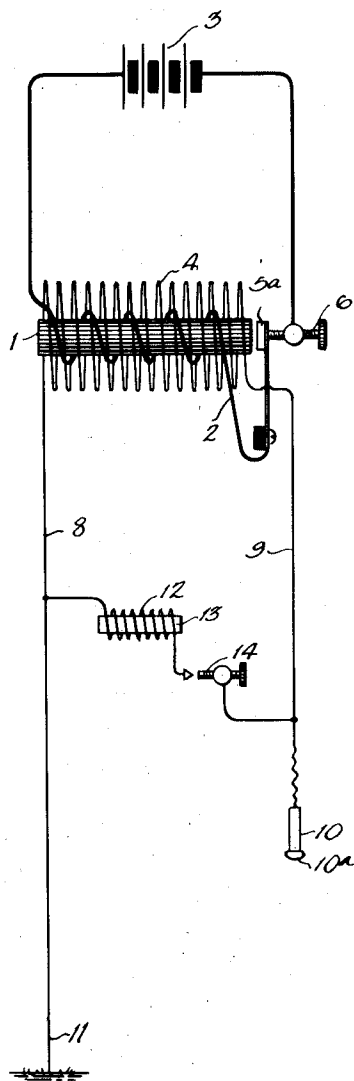


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ELECTROMEDICAL APPARATUS
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WITNESSES

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ELECTROMEDICAL APPARATUS.

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This invention relates to an electromedical apparatus. An object of the invention is to provide a simple and efficient apparatus for the production of low frequency currents for application to the human body which is practically insulated.

Another object concerns the provision of means whereby the strength of these currents can be very easily regulated to produce a variety of effects.

A further object concerns the provision of means whereby the manipulation of the device is rendered extremely simple.

The invention is illustrated in the drawing, which is in the form of a diagram of the apparatus and the circuits involved.

The form of the invention shown in the drawings is a preferred form, although it is understood that modifications in the construction and arrangement of the parts and the character of the materials used may be adopted without departing from the spirit of the invention as set forth in the appended claims.

In the production of electrotherapeutic effects on the human body, I have found that proper effects are obtained as well by the use of low frequency currents as by the use of high frequency currents; and, furthermore, that by using low frequency current the stimulation to the nerve centers of a practically insulated system are not so pronounced and are, therefore, not so liable to be detrimental to the success of the treatment. Furthermore, by providing a simple arrangement of co-operating parts I can considerably reduce the value of the current to a point where it is almost negligible to the senses although still of sufficient value to have an effect on the nerve centers.

In general, the invention comprises a main coil of the Ruhmkorf type, having a primary and a secondary. The primary circuit is provided with a source of current and a vibrating element which is adapted to have a slow rate of vibration. In the secondary circuit there is established a ground connection and an electrode which is to be applied to the insulated human body. Shunted across the terminals of the secondary, I provide an auxiliary coil in series with a gap which can be adjustable. When this auxiliary gap is made small enough the output of the main secondary coil is absorbed through this shunt circuit, so that only a small amount of the energy is available

through the electrode. By this arrangement I can reduce the amount of current available at the electrode when desired.

As shown in the drawings, the main coil is provided with a core 1 of any usual type, and a primary winding 2 in circuit with which there is a battery 3. A secondary coil 4 is provided, the terminals of which are connected to wires 8 and 9 one of which is connected to the ground 11 and the other of which is connected to an electrode 10 of any suitable type. Preferably the end surface 10^a is a metal plate to be pressed against the body.

In circuit with the primary coil 2 is a vibrating spring 5 the end of which, 5^a, in the usual manner acts as an armature. Associated with this vibrating spring plate is an adjustable contact point 6 whereby the movement of the plate 5 will make and break the circuit through the battery in the primary coil 2. Shunted across the terminal of the secondary coil 4 is a coil 12 having a core 13, and in series with this coil there is an adjustable gap 14.

Preferably the vibrating spring 5 and the contact member 6 are made of soft metal. In a specific instance, the spring 5 may be made of a sheet of soft brass, and the ends of the contact member 6 can be made of tempered copper wires (not shown). By reason of the provision of this character of vibrator elements the frequency of vibration is relatively low so that the making and breaking of the circuit in the primary will produce a low frequency current in the secondary.

In ordinary operation the adjustable auxiliary gap 14 is so far opened that all the energy of the secondary circuit will pass through the electrode 10 to the insulated system. However, when the gap 14 is made sufficiently small it will be understood that the energy of the main secondary circuit will jump the gap and pass through the coil 12, the impedance of which is designed to be relatively small compared to the resistance offered to the human body through the electrode 10. Therefore, when the auxiliary gap is adjusted so that the coil 12 absorbs a considerable amount of the energy of the secondary coil 4, the amount of current passing through the electrode and, therefore, through the body is reduced.

It is obvious that there are only two ele-

ments that require adjustment, namely, the adjustable gap 14 and the contact member 6, and that by adjusting these in the desired relation the character of the current produced can be varied. It is further obvious that these parts as set forth co-operate in a very simple manner to achieve the desired result.

10 In insulating the human body it is preferable to have a patient lie or stand on a rubber mat or sheet during treatment for insulating the human body from the earth as far as is practical.

What I claim is:—

15 1. An electromedical apparatus comprising a main primary and a secondary coil inductively related, a source of current and a vibrating interrupter of low frequency in

series with the primary coil, a ground connection and an electrode with the secondary 20 coil, an auxiliary coil and an adjustable gap shunted across the terminals of the secondary coil, and means for practically insulating a human body during the process of guiding an electric current over the single 25 electrode into the body.

2. An electromedical apparatus comprising a primary and a secondary coil inductively related, a source of current and a vibrating interrupter so constructed and of 30 such material as to produce an interrupter of a comparatively low rate of vibration and a gap shunted across the terminals of the secondary coil.

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