

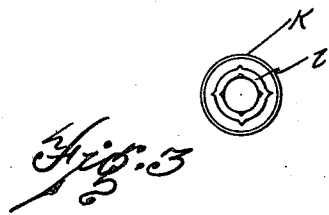
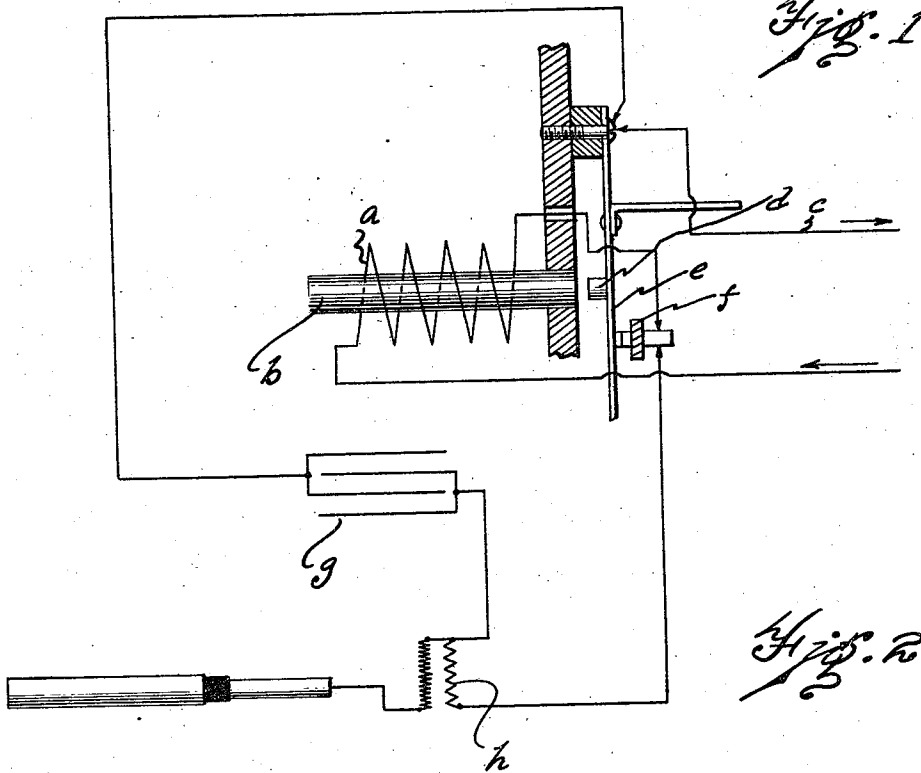
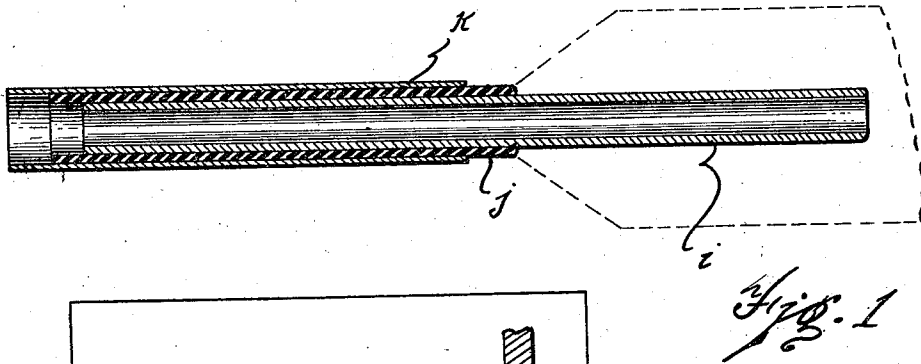
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ELECTROTHERAPEUTIC ELECTRODE

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ELECTROTHERAPEUTIC ELECTRODE.

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This invention relates to electrotherapeutic apparatus. In high frequency or violet ray apparatus used for electro-therapeutic purposes it is common to use two varieties of electrodes, namely, vacuum glass tubes and metal electrodes. In monopolar machines it is found desirable, if not necessary, to connect the secondary of the induction coil to the primary coil.

No bad effects follow from this unless the patient using a metal electrode becomes grounded. If he happens to touch a bath-room fixture, a radiator coil, or any other direct communication with the ground he will get a terrific shock. The reason for this is that he is in direct circuit with the lighting circuit and consequently gets all the current flowing through the light circuit plus the addition of voltage impressed upon it by the coils in the high frequency apparatus.

It is the object of the present invention to overcome this objection by making the electrode in the form of a condenser.

In the drawings:

Fig. 1 is a longitudinal section of my improved condenser.

Fig. 2 is a diagrammatic view of the apparatus.

Fig. 3 is an end elevation of the electrode.

In an apparatus of this kind the hook-up usually comprises an inductance or kicking coil *a* having an iron core *b*. This is connected up with an electric light circuit *c*. When the current flows through the coil *a* the core is energized and magnetized, attracting the armature *d* of the interrupter arm *e*. This breaks the circuit at the point *f*. The condenser *g* is bridged across the interrupter gap and when the circuit is broken the condenser rapidly charges and discharges across the gap furnishing oscillations of high frequency and a relatively high voltage. This voltage is again stepped up to an even higher voltage by means of the induction coil *h*. The secondary of this induction coil is connected with the primary as shown in the drawings. The other end of the secondary is connected with the socket in which the electrode, either a plain metal electrode or a glass vacuum tube, can be interchangeably fitted.

My improvement consists of a new form of metal electrode instead of a plain metal electrode. I use the electrode having a metal

tube *i*, a dielectric sleeve *j* and a metal shell *k*. These are connected together by swaging the inner tube *i* with an instrument when they have been fitted together, as shown in Fig. 3. This distorts the shape of the inner tube so as to tie the parts together.

This dielectric is preferably fibre, which is a good dielectric in the sense that it readily permits the passage of electrostatic induction but is an insulator of high value to the direct passage of an electric current. This, therefore, protects the user by completely insulating him from a direct connection with the electric light circuit. On the other hand, it furnishes a condenser of sufficient capacity for electrostatic induction, that is to say, it furnishes a condenser with two metal plates with interposed dielectric as the inner plate is alternately charged at an enormous frequency with positive and negative electricity. This alternately repels and attracts and causes the current to flow into and flow from the patient's body.

What I claim is:

1. A high frequency electrode for electrotherapeutic apparatus, comprising a pair of metal members separated by a dielectric only the outer metal member being adapted to contact with the body of the patient

2. A high frequency electrode for electrotherapeutic apparatus, comprising a metal member adapted to be connected to the socket of the apparatus, a second metal member for contacting with the body of the patient and enclosing said first-named metal member, and a dielectric material separating said two metal members.

3. A high frequency electrode for electrotherapeutic apparatus, comprising a metal tube for fitting into a socket, a dielectric sleeve fitted around the tube and a member in the form of a condenser plate for the hand to grasp.

4. A high frequency electrode for electrotherapeutic apparatus, comprising a metal tube for fitting into a socket, a dielectric sleeve of distortable material covering the outer surface of the metal tube, and a metal shell on the outside of the sleeve, the inner sleeve being swaged to tie the members together.

In testimony whereof I have affixed my signature.

JAMES H. EASTMAN.