No. 785,366. PATENTED MAR. 21, 1905.

R. MACHLETT.

VACUUM ELECTRODE.

APPLICATION FILED DEC. 1, 1904.

Fig. 1

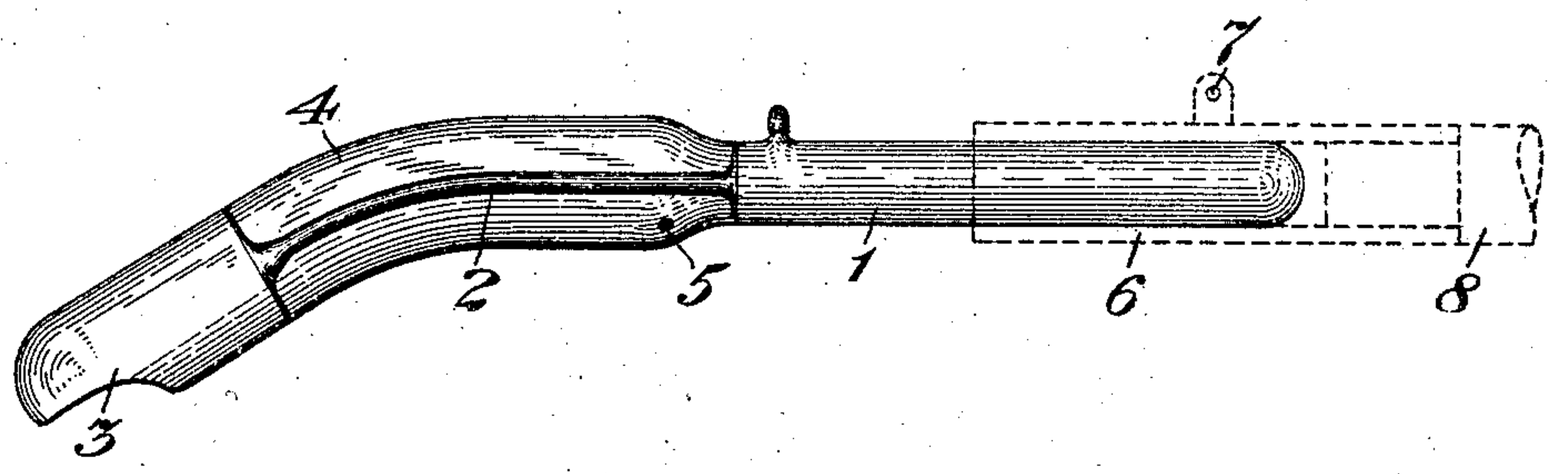
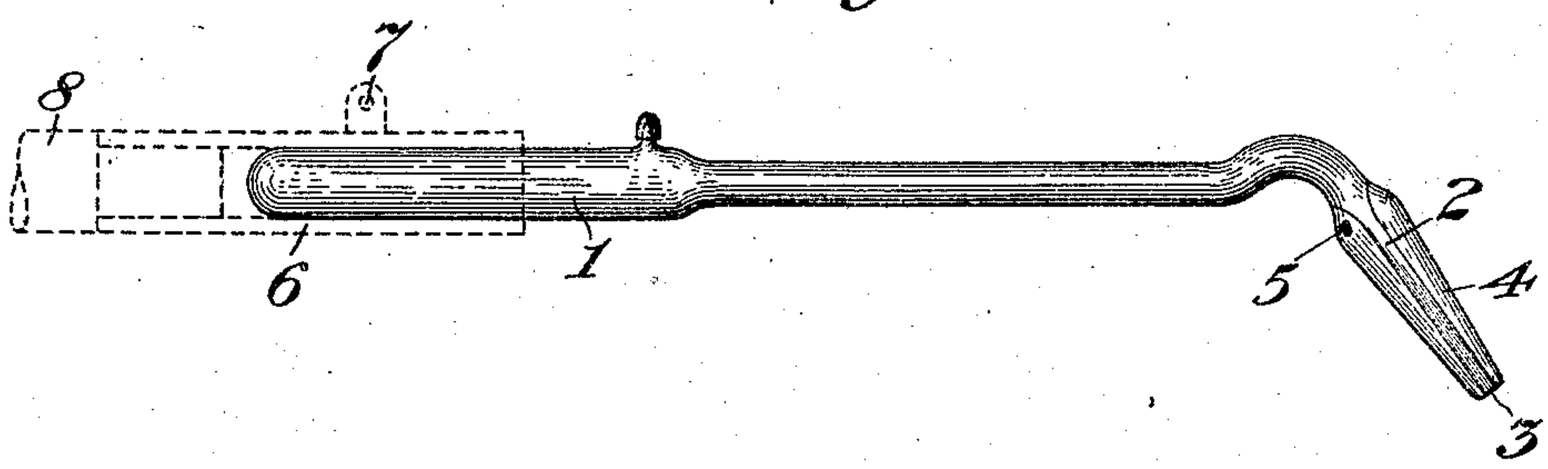



Fig. 2




Witnesses:
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No. 785,366. Patented March 21, 1905.

# UNITED STATES PATENT OFFICE.

ROBERT MACHLETT, OF NEW YORK, N. Y.

## VACUUM-ELECTRODE.

SPECIFICATION forming part of Letters Patent No. 785,366, dated March 21, 1905.

Application filed December 1, 1904. Serial No. 235,080.

*To all whom it may concern:*

Be it known that I, ROBERT MACHLETT, 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 certain new and useful Improvements in Vacuum-Electrodes, of which the following is a specification.

This invention relates to vacuum-electrodes as employed and used in electrotherapeutics in the application of high-tension currents of electricity to the human body for the purpose of destroying micro-organisms or germs in a diseased portion of the flesh.

The action of the rays produced by a high-tension current passing through a vacuum-electrode in destroying any toxic matter and stimulating a healthy action and growth in the diseased tissues is well known and need not be entered into to any great length at this time. In treatment by aseptic or antiseptic methods in which electrodes of this character are used the process consists in the application of a high-tension current of the electricity to the affected parts by means of a unipolar vacuum-electrode, of glass or other vitreous material. This results in the decomposition of the air surrounding and occluded within the diseased tissues and the production of nascent ozone, which results in an immediate oxidation of any diseased or toxic matter and the destroying of all germ organisms. A further beneficial effect is produced in the stimulation of a healthy growth in the tissues by the molecular bombardment of the rays.

The high-tension current may be produced in any manner, such as by the use of a Ruhmkorff coil, one terminal of the secondary of this coil being connected to a patient by any convenient means and the other terminal either connected directly to the electrode by a metallic sleeve fitted over one end of the same with a wire connection or to a sealed-in terminal, or the circuit may be made through the body of the operator to the electrode, which he may carry in his hand and apply the same to the patient under treatment. The particular means employed to induce the current in the electrode forms no part of this invention, as it has been made the subject of various other patents covering several devices which are applicable to different conditions of operation.

The object of this invention is to provide an electrode having a portion of the same so formed as to present an exterior contact-surface shaped and adapted to apply the current direct to a particular part of the body of the patient under treatment, and to further provide means for insulating a portion of said electrode, so as to prevent the passage of the current from the same to any other part of the body except that under treatment, so limiting and concentrating the current at that particular point. This results in a much more efficient treatment of the diseased tissues and also prevents the unpleasant sensations produced by imperfect contact and resultant burning of the flesh at the point where the electrode is introduced into the interior members of the body, such as the ear-drum, &c.

As a means of insulating a portion of the electrode for the purposes above set forth I provide an air-chamber surrounding that portion of the electrode which will come in contact with the outer flesh of the body, as above described, and as air is one of the best insulators the desired result is obtained in a very simple manner. The exterior wall of this air-chamber may be made as a continuation or extension of the contact-wall of the electrode in order that the same may be easily introduced into a cavity, as described. It will be understood that any insulating means may be employed for the purpose set forth with the same results.

Referring to the drawings accompanying this specification, Figure 1 is a side elevation of an electrode, of glass or other vitreous material, adapted for use in the vagina. Fig. 2 is a side elevation of a similar electrode of somewhat different form adapted for use in the ear.

Various other special forms adapted for use in different parts of the body—such as the throat, nose, &c.—may be made by a change in the shape of the contact-surface to adapt it to any treatment desired.

The current may be introduced into the electrode at the end 1 by any desired means,

as hereinbefore described, the simplest being for the operator to complete the circuit through his own body and grasping the electrode at 1 carry the current to the same through his hand, thus dispensing with any wire connections. Another method is to provide a metal sleeve, such as shown in dotted outline at 6, having a wire connection 7 and an insulated handle 8. A contracted passage 2 connects the vacuous space at 1 with a second vacuum-chamber 3. This latter chamber is provided with a contact-surface adapted to apply the current direct to the part of the body under treatment and varies in form in accordance therewith.

Surrounding the contracted passage 2 is an air-chamber 4, having an opening 5 therein to the outside air. The wall of this air-chamber may form a continuation of the wall of the vacuum-chamber 3, as shown in Fig. 1, or may be of any other form, such as shown in Fig. 2, adapting it to the required use and providing an insulated portion of the electrode for the purpose set forth.

My invention is not to be understood as being limited to the exact details of construction shown and described, as it will be evident that various changes may be made therein to adapt the same to various uses, &c., without departing from the scope of my invention.

What I claim is—

1. A vacuum-electrode having a contact-surface adapted to apply an electric current direct to the body of a patient, means for concentrating the passage of said current in said contact-surface, substantially as described.

2. A vacuum-electrode having a contact-surface adapted to apply an electric current direct to a body of a patient, means for limiting the passage of said current to said contact-surface, substantially as described.

3. A vacuum-electrode having a contact-surface adapted to apply an electric current direct to the body of a patient, and having an insulated portion adapted to prevent the passage of said current to the body of a patient from that part of the electrode, substantially as described.

4. A vacuum-electrode having a uniform exterior surface with a portion thereof insulated from a current passing through the vacuous space in said electrode, and having a portion of said surface adapted to apply the current direct to the body of a patient, substantially as described.

5. A vacuum-electrode having a portion of the vacuous space therein contracted, and means for insulating said contracted portion from the exterior surface of the electrode, substantially as described.

6. A vacuum-electrode having a portion thereof insulated in such a manner as to prevent the passage of the current from said electrode to that portion of the exterior surface thereof, substantially as described.

7. A vacuum-electrode having a portion thereof adapted to form a contact-surface, a portion thereof forming a handle through which the current passes to the interior of the electrode, and an intermediate portion insulated from the current passing through the electrode, substantially as described.

8. A vacuum-electrode having two vacuum-chambers, a passage connecting said chambers, and means for insulating said passage from the exterior surface of the electrode, substantially as described.

9. A vacuum-electrode containing a vacuum-chamber having a contact-surface adapted to apply an electric current direct to a body of a patient, and an air-chamber surrounding a portion of said vacuum-chamber and insulating the same from exterior contact, substantially as described.

10. A vacuum-electrode containing a vacuum-chamber having a contact-surface adapted to apply an electric current direct to the body of a patient, and an air-chamber having an inclosing wall forming an extension to and surrounding a portion of the inclosing wall of said vacuum-chamber, insulating the same from exterior contact, substantially as described.

Signed at New York, in the county of New York and State of New York, this 28th day of November, A. D. 1904.

ROBERT MACHLETT.

Witnesses:
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