

No. 684,326.

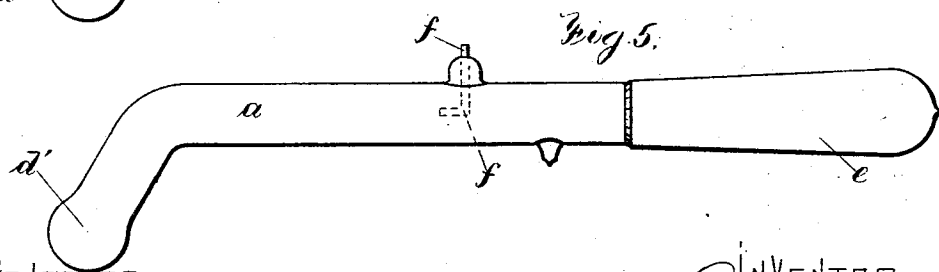
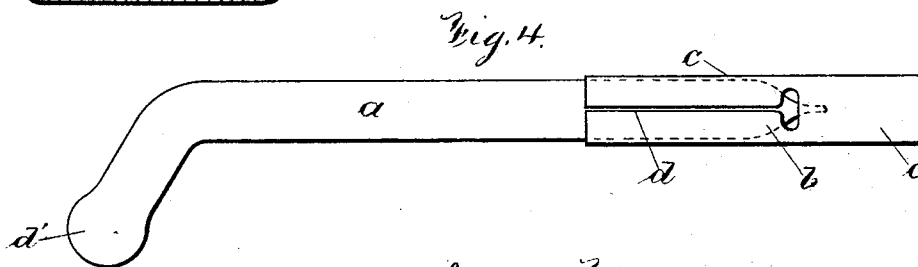
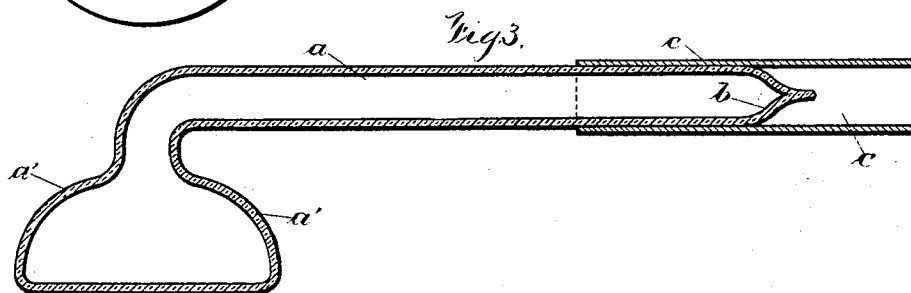
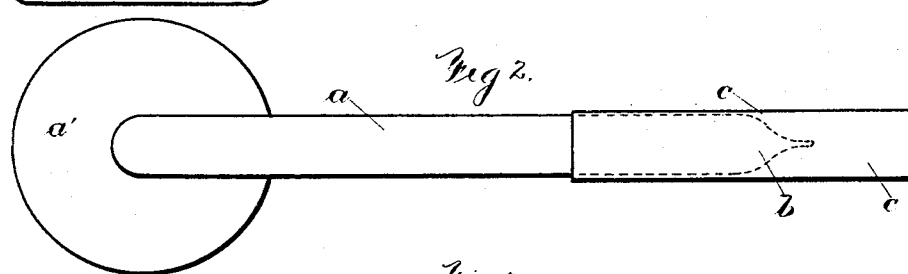
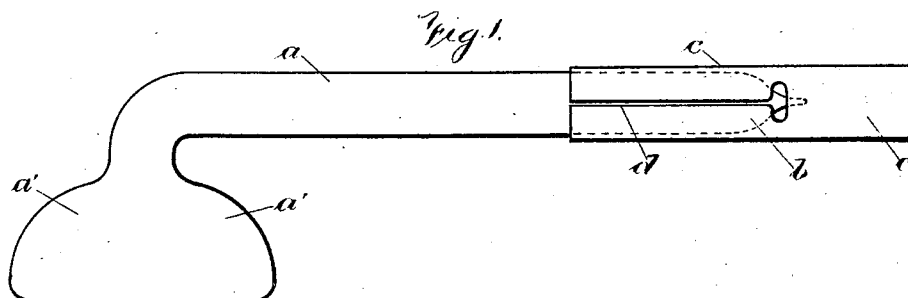
Patented Oct. 8, 1901.

R. H. WAPPLER.

VACUUM ELECTRODE FOR THERAPEUTIC PURPOSES.

(Application filed Mar. 5, 1901.)

(No Model.)



WITNESSES  
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# UNITED STATES PATENT OFFICE.

REINHOLD H. WAPPLER, OF NEW YORK, N. Y.

## VACUUM-ELECTRODE FOR THERAPEUTIC PURPOSES.

SPECIFICATION forming part of Letters Patent No. 684,326, dated October 8, 1901.

Application filed March 5, 1901. Serial No. 49,668. (No model.)

*To all whom it may concern:*

Be it known that I, REINHOLD H. WAPPLER, a citizen of the United States, residing in the borough of Manhattan, city and State of New York, have invented an Improvement in Vacuum-Electrodes for Therapeutic Purposes, of which the following is a specification.

Heretofore a vacuum-electrode of vitreous material has been employed in electrotherapeutics for effecting electrical asepsis and stimulation by passing high-tension currents through said electrode, and thereby decomposing the air surrounding the same into ozone, which when brought into the proximity of any diseased surface quickly oxidizes all toxic matter present therein. In these electrodes it is general to provide an integral insulating-handle and also one pole by which the interior of the tube of the electrode is connected electrically with one terminal of the source of the high-tension currents employed.

My present invention relates to vacuum-electrodes used for therapeutic purposes, and in carrying out my invention I dispense with an insulating-handle and also with the unipolar terminal commonly employed in electrodes of this type. The electrode comprises a tube of vitreous material, preferably glass, in which is a vacuum. One end of the tube is blown to the shape most desirable in the treatment of any one disease. Hence in a number of tubes the shape of this end will be as varied as the number of diseases to be treated by said tubes. The other end of the vacuum-tube and from which the air is exhausted is drawn to a point when fused to close the tube, and over this end a cylindrical metal sleeve is fitted, forming a support or handle for the electrode and at the same time a conductor by which the current enters the vacuum-tube.

In the drawings, Figure 1 represents a side elevation of one form of my improved electrode. Fig. 2 is a plan of the same. Fig. 3 is a vertical section taken centrally through Fig. 1. Fig. 4 shows an electrode of modified shape. Fig. 5 shows the features embraced in the electrodes used heretofore.

a represents a tube of glass or other vitreous material, having one end *a'* blown to any desired form. In Figs. 1, 2, and 3 I have illus-

trated a bell-shaped form; but I do not limit myself to this form, as it is advantageous to vary the shape of this end according to the disease to be treated and the location thereof, and it is therefore desirable to have a number of similar tubes with differently-formed ends for an operator's use. The other end of the tube *b* is advantageously drawn to a point in all cases when a vacuum is produced in the tube and no entering wire or pole is employed. I employ a metal tube or sleeve *c*, longitudinally slotted at *d* for part of its length and having an opening or end slot transversely thereof, thereby constituting in the tube *c* two adjacent yielding parts. This metal tube fits over the end *b* of the vacuum-tube to a liberal extent, inclosing the teat at the point of fusion after forming the vacuum, and the tube forms a handle for the electrode and at the same time protects the said teat from injury. It is adapted to slightly yield to the inserted electrode to conform thereto and closely embrace the same. This yielding function of the tube *c* causes the same to conform to slight differences in the sizes of the electrode-tubes, which in fitting a common handle are interchangeable with one another.

Fig. 4 shows the end *d'* of the vacuum-tube as spherical in shape.

Fig. 5 illustrates the electrodes used heretofore, having an insulating-handle *e* and a projection fused after producing a vacuum and an adjacent unipolar terminal *f* to be connected with one terminal of the source of the high-tension currents. With these devices there was liability of the current passing to the teat and melting or rupturing the same, and so breaking down the vacuum.

In practice the high-tension currents necessary to operate the vacuum-electrode may be produced in any manner whatsoever—for instance, a Ruhmkorff coil may be employed. In this case the current is induced in the secondary in the usual manner. One terminal of the secondary is connected electrically to a plate upon which the patient to be treated is placed. The other terminal of the secondary is insulated. The circuit is completed from the plate upon which the patient is placed by the patient, the vacuum electrode,

and to the insulated terminal of the secondary through the air. Thus in treatment the patient is placed on or closely adjacent to the plate, and the operator grasping the electrode by the handle applies the end of the electrode to the diseased parts and is not hampered by wires or electrical connections of any kind.

I claim as my invention—

10 1. An electrode of vitreous material containing a vacuum and having a metal sleeve fitted over a part of said electrode forming a handle for the same, substantially as set forth.

15 2. In an electrode for electrotherapeutic purposes, the combination with a glass tube of smooth, even exterior, containing a vacuum, of a metal sleeve fitting over one end of said tube and forming a handle for the electrode, substantially as set forth.

20 3. In an electrode for electrotherapeutic purposes, the combination of a glass tube containing a vacuum and having one end blown to serve as a contact-surface, of a yielding sleeve of metal fitting over the other end of

said tube forming a handle for the electrode, substantially as set forth. 25

4. In an electrode for electrotherapeutic purposes, the combination of a glass tube containing a vacuum and having one end blown to serve as a contact-surface, of a yielding sleeve of metal fitting over the other end of said tube forming a handle for the electrode, said sleeve of metal having a longitudinally-arranged slot with an end transverse slot forming two yielding portions, substantially as and for the purposes set forth. 35

5. An electrode of vitreous material containing a vacuum and having a metal sleeve fitting to a liberal extent over a part of said electrode, forming a handle for the same and inclosing the teat at the end of the electrode-tube made at the point of fusion after forming the vacuum, substantially as set forth. 40

Signed by me this 1st day of March, 1901.

REINHOLD H. WAPPLER.

Witnesses:

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BERTHA M. ALLEN.