

No. 715,684.

Patented Dec. 9, 1902.

F. McDONALD.
ANODE.

(Application filed Apr. 7, 1902.)

(No Model.)

Fig. 1.

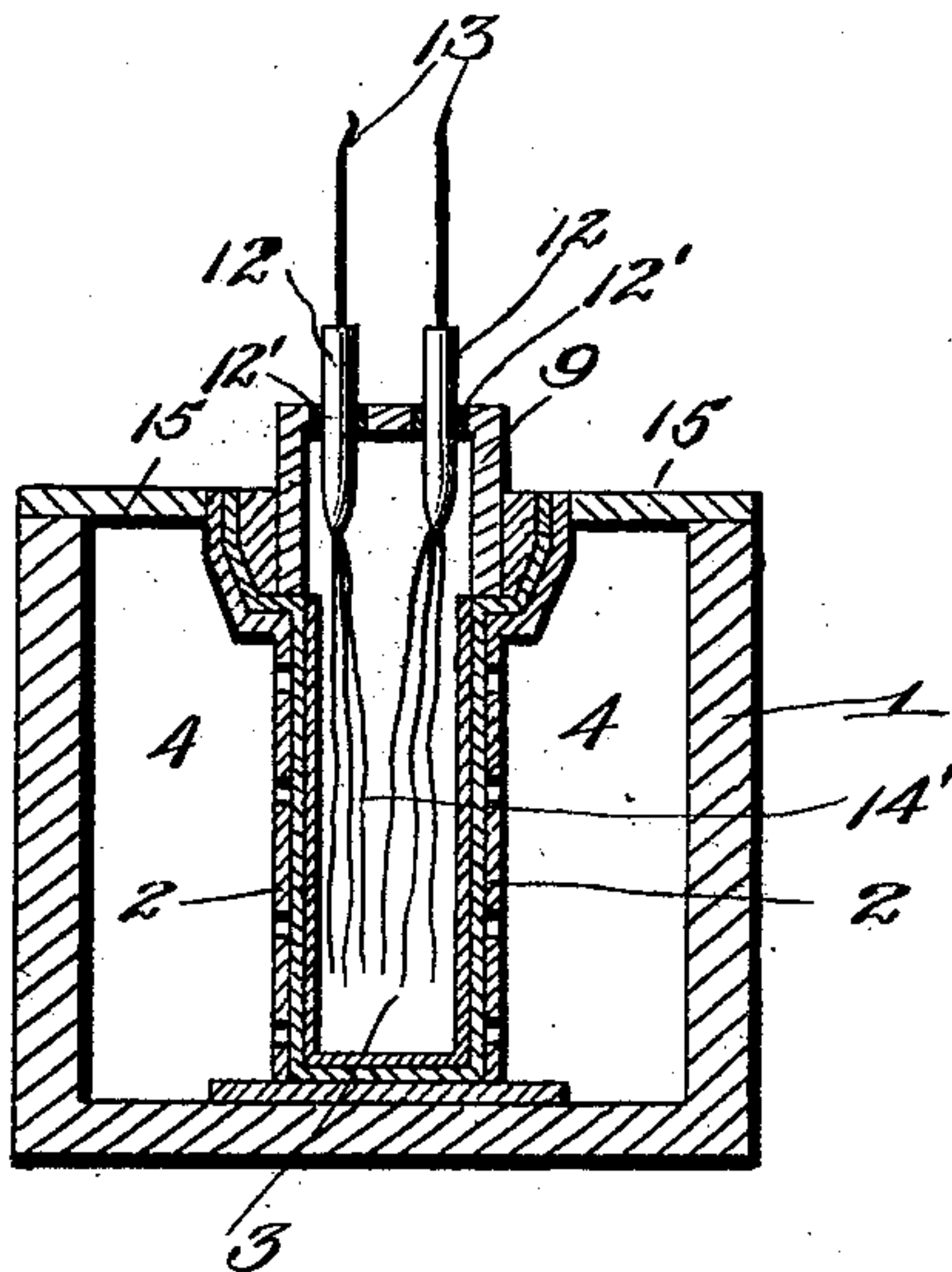
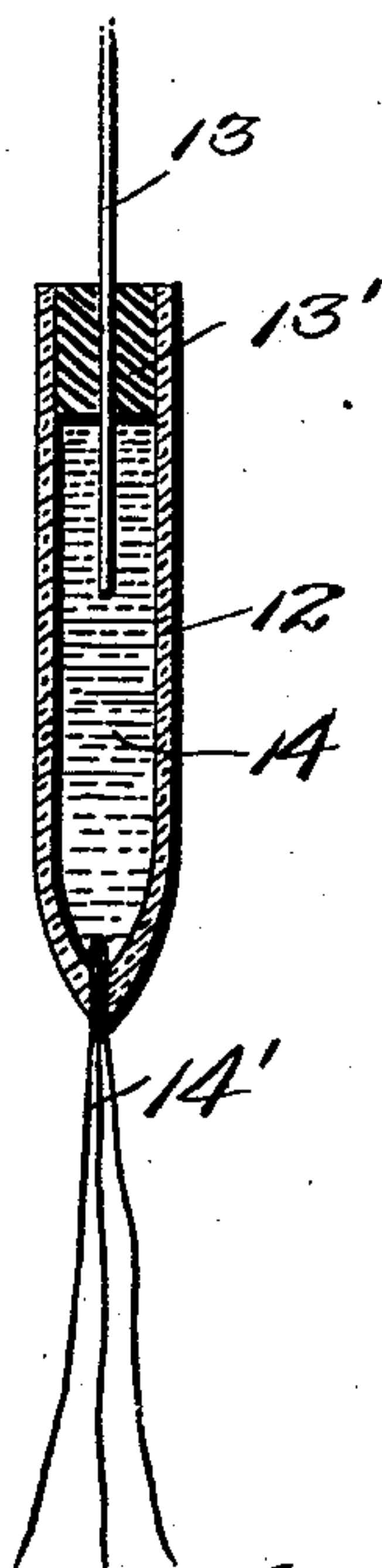


Fig. 2.



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FRANK McDONALD, OF JOHNSONBURG, PENNSYLVANIA.

ANODE.

SPECIFICATION forming part of Letters Patent No. 715,684, dated December 9, 1902.

Original application filed May 20, 1901, Serial No. 61,116. Divided and this application filed April 7, 1902. Serial No. 101,794. (No model.)

To all whom it may concern:

Be it known that I, FRANK McDONALD, a subject of the King of Great Britain, residing at Johnsonburg, in the county of Elk and State of Pennsylvania, have invented certain new and useful Improvements in Anodes; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to anodes for electrolytic apparatus of the kind designed for the electrolysis of metallic salts; and the present application is a division of my application filed May 20, 1901, Serial No. 61,116, and allowed October 19, 1901.

The object is to provide an anode which is simple of construction and advantageous in widely diffusing the current without undue heating.

The invention consists in certain novel features of construction and combination and arrangement of parts, as will be hereinafter fully described and claimed.

A practical embodiment of the invention is illustrated in the accompanying drawings, in which like characters of reference denote like parts throughout the views, and in which—

Figure 1 is a vertical transverse section through an electrolytic apparatus embodying my invention. Fig. 2 is a detail longitudinal section of the anode.

The electrolytic apparatus shown is of the form disclosed in my prior application, and consists of a tank 1, provided with the partition-plates 2, forming the central anode-compartment 3 and cathode-compartments 4. A cover 9 closes the anode-compartment, and a cover or covers 15 close the cathode-compartments. The cover 9 is formed with openings for the passage of the anodes, each of which consists of a tube or cup 12, of glass or other suitable insulating material, between which and the wall of the opening an air-tight filling 12', of cement, is placed. The positive wires 13 are fitted in these cups and contact with mercury 14, placed therein, and also in electrical connection with the mercury and extending down into the anode-compartment are thin thread or ribbon like filaments or strips 14', of platinum-foil, which are sealed

into the cup. These strips project some distance down into the tank in close proximity to the diaphragms, and by their use a much more thorough and effective distribution of the electric current through the solution in the anode-compartment is effected than it is possible to obtain by the use of platinum wire. In a full-sized apparatus employing a tank about five feet long, twelve inches wide, and twelve inches deep these strips will preferably be about ten inches long and two inches wide; but the proportions may be varied, if desired. A preferred way of securing the platinum strips in position is to cross or tie said strips at their central portions and to place the same within the lower end of the tube while the latter is in a heated condition and then to press the lower tapered end of said tube inward about the wires to confine them in place. By this mode the glass or material of which the tube is composed is brought into immediate contact with the strips to prevent the formation of air inlets or apertures and on becoming hardened holds the strips firmly in position. The upper end of the tube is closed by a stopper or seal 13', preferably of cement, which forms an air-tight joint at the point where the contact-wire 13 enters the tube. The mercury 14 forms a conductor between the wire 13 and the strips 14' and in addition acts as a seal to prevent the entrance of the electrolyte, air, or any foreign substances liable to cause a deleterious action.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An anode comprising a tube or cup containing mercury, and a plurality of thin strips or filaments of platinum-foil sealed within the tube and in contact with the mercury and projecting from the tube, substantially as described.

2. An anode comprising a tube having a conducting-wire entered therein and provided with thin strips or filaments of platinum-foil in electrical connection with said wire and projecting from the tube, substantially as specified.

3. An anode comprising a tube closed at one end and sealed at the opposite end, a conductor projecting through the closure into said

tube, strips of platinum-foil sealed in the closed end of the tube and projecting exteriorly therefrom in the form of free or independent linear strands, and a filler of mercury
5 within the tube and electrically connecting the conductor and strips of platinum-foil, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FRANK McDONALD.

Witnesses:

W. I. SECRIST,
M. H. WALSH.