

(No Model.)

A. E. WOOLF.
ELECTRODE.

No. 578,070.

Patented Mar. 2, 1897.

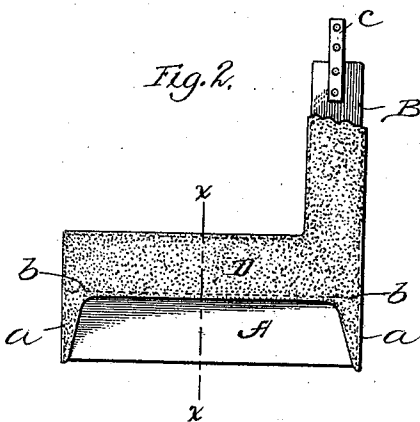
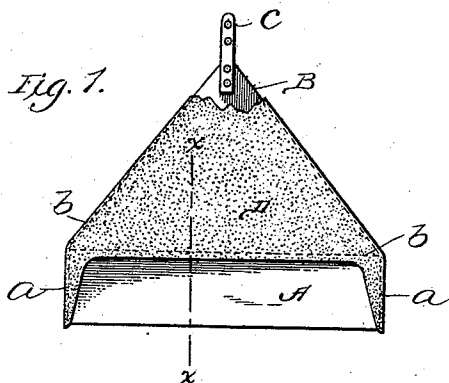
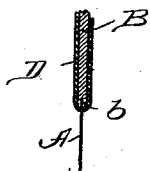


Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ALBERT E. WOOLF, OF NEW YORK, N. Y., ASSIGNOR TO ROSAMOND WOOLF,
OF SAME PLACE.

ELECTRODE.

SPECIFICATION forming part of Letters Patent No. 578,070, dated March 2, 1897.

Application filed January 13, 1896. Serial No. 575,373. (No model.)

To all whom it may concern:

Be it known that I, ALBERT E. WOOLF, a citizen of the United States, residing at New York city, in the county and State of New York, have invented certain new and useful Improvements in Electrodes; and I do hereby 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 electrodes adapted for decomposing by electrolysis a saline or other solution for obtaining products and from which gases are liberated which attack and are injurious to most metals.

The object of my invention is to provide an efficient compound electrode of comparative small cost having an exposed surface only of platinum or a metal of the platinum group which will resist the action of corrosive gases and a comparatively cheap conducting metal having a suitable insulating coating.

Owing to the high cost of platinum, electrodes of that metal have not been commercially successful in electrolytic operations; but by my construction such difficulty is overcome and satisfactory results produced.

My electrode consists of a thin piece or strip of platinum or a metal of the platinum group, preferably of platinum compound plate, attached to a good conducting metal of less cost, that is, a base metal, such as copper, iron, or other metal, which latter has an insulating-coating to protect it against the corrosive action of the gases liberated by the process of electrolysis. I preferably use a strip or plate of platinum compound about one one-thousandth of an inch in thickness, comparatively wide, or long from end to end and short in the direction from its inner edge, which connects with the base-metal plate, to its outer free edge, whereby greater conductivity of the current is secured without encountering a great degree of resistance.

Electrodes embodying my invention and of suitable shapes are illustrated in the accompanying drawings, in which—

Figure 1 represents a side elevation of one shape of electrode having part of the insulat-

ing-coating broken away at the upper end. Fig. 2 represents a side elevation of another shape of electrode also having part of the insulating-coating broken away at the upper end. Fig. 3 represents a vertical transverse section of the electrodes on line *xx*.

A plate B of comparatively cheap conducting base metal, such as copper or iron, is used for the upper or inner end of the electrode and is preferably slotted at its long lower edge *b* for receiving the plate of platinum A. The plate A is inserted at its upper edge into the slot *b*, and then the overlapping edges of the plate B are pressed or hammered down upon the plate A, so as to securely hold it in place. The platinum plate A may be otherwise secured to the plate B, as by riveting. To the upper end of plate B is secured a lug or projection C, to which may be conveniently attached the conducting-wire. The plate of platinum A having been secured to the conducting-plate B, the insulating-coating D may be applied to the entire surface of plate B and also to the ends *a* of the plate A, as shown in the drawings, in order to make said plate more rigid.

I may make the platinum plate corrugated in order to impart to it firmness and rigidity. The insulating-coating D may be composed of glass, rubber, enamel, or other insulating material, and is applied in such manner that the electrode may be immersed in the electrolyte without being affected by the gases set free in the electrolytic process. One method of protecting the metal of the electrode is by rubber. A coating of soft rubber D is applied to the plate B and is extended down so as to cover the ends *a* of the plate A, as shown in the drawings. After the coating has been thoroughly applied the whole electrode is subjected to the vulcanizing process. After using my improved electrode for a long time in an electrolytical process, where such corrosive gases as oxygen and chlorine are liberated, I do not find any corrosive action on any part of the metal in the electrode.

I find that by attaching the long side or edge of the platinum plate to the long side or edge of the base-metal plate instead of to the narrow end of said plate I gain the advantage of bet-

ter conductivity, since by this construction the current does not encounter the resistance that it otherwise would.

5 Other shapes or forms of electrodes than those shown in the drawings may be used for accomplishing the purposes herein described, and I therefore do not confine myself to the specific designs herein shown, but simply use them to illustrate a suitable form of electrode.

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

1. An electrode for electrolysis of saline solutions consisting of an exposed thin plate of metal or metals of the platinum group, said plate being comparatively long from end to end, and narrow from its inner attached edge to its outer free edge, a connected conducting-plate of base metal, the platinum-compound plate being attached at its long edge to a similar edge of said conducting-plate and having a long free edge, and a coating of insulating material applied to the surface of said conducting-plate, and to the joint at the attached edges of said plates to protect them from the

corrosive action of gases, substantially as described.

2. An electrode for electrolysis of saline solutions consisting of an exposed thin plate of metal or metals of the platinum group, said plate being comparatively long from end to end, and narrow from its inner attached edge to its outer free edge, a connected conducting-plate of base metal, the platinum-compound plate being attached at its long edge to a similar edge of said conducting-plate and having a long free edge, and a coating of insulating material applied to the surface of said conducting-plate, to the joint at the attached edges of said plate and to the ends of said platinum plate, to prevent the corrosive action of gases and give greater strength and rigidity to the electrode, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ALBERT E. WOOLF.

Witnesses:

WILLIAM S. ROUND,
JOS. S. BIENENSTOCK.