

July 28, 1936.

J. P. DYER

2,048,854

ELECTRODE AND METHOD OF PRODUCING THE SAME

Filed Dec. 15, 1933

Fig. 1.

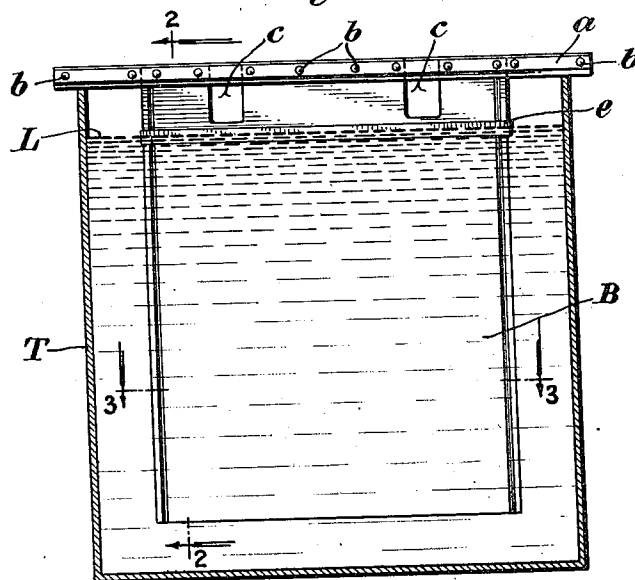


Fig. 2.

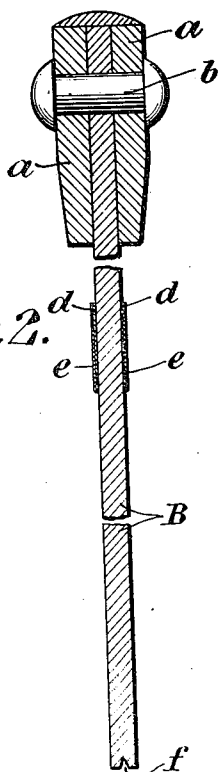


Fig. 3.

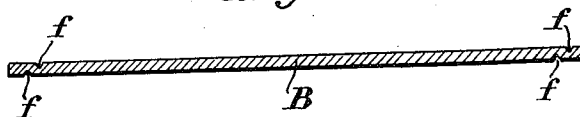
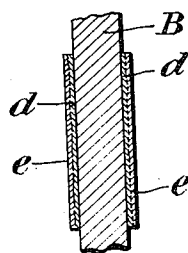


Fig. 4.



INVENTOR
John P. Dyer.

BY

Ward, Crosby & Neal
ATTORNEYS

UNITED STATES PATENT OFFICE

2,048,854

ELECTRODE AND METHOD OF PRODUCING
THE SAMEJohn P. Dyer, El Paso, Tex., assignor to Nichols
Copper Company, New York, N. Y., a corpora-
tion of New York

Application December 15, 1933, Serial No. 702,559

3 Claims. (Cl. 204—6)

My invention relates to an electrode adapted particularly for electrolytic uses; my invention has further reference to a method of producing an electrode of the character stated.

5 In accordance with my invention, an electrode is constructed in such manner as to largely or substantially overcome the corrosive effect heretofore produced thereon by the electrolytic solution.

10 Various other objects, advantages and characteristics of my invention will become apparent from the following detailed description.

My invention resides in the electrode, method of producing the same, features and electrode arrangement of the character hereinafter described and claimed.

15 For an understanding of my invention and for an illustration of one of the forms thereof, reference is to be had to the accompanying drawing, in which:

Figure 1 is an elevational view, partly in section, showing an electrolytic tank and an immersed electrode;

20 Fig. 2 is a vertical sectional view taken on the line 2—2 of Fig. 1 looking in the direction of the arrows;

Fig. 3 is a horizontal sectional view taken on the line 3—3 of Fig. 1 looking in the direction of the arrows; and

25 Fig. 4 is a fragmentary, enlarged sectional view showing a feature of my novel electrode.

For purposes of explanation, although not to be so limited, my invention is herein illustrated and described as having application to cathode "blanks" which, as well understood in the art, are rolled copper sheets which are hung in electrolytic tanks so that, on each, there may be deposited a thin sheet of copper which, after formation, is stripped from its cathode blank and subsequently used as a foundation for a commercial cathode.

On the drawing, B represents such a cathode blank which, along the top edge thereof, carries the strip members *a* permanently secured to said blank B by the headed members *b*. As shown in Fig. 1, the blank B, below the members *a*, may be provided with the apertures *c* to be engaged by hooks or the like, not shown, when the blank B is to be moved from place to place.

45 As shown in Fig. 1, opposite ends of the members *a* rest upon the side walls of a tank T where-by the blank B is supported in the electrolytic solution contained in said tank T, this electrolytic solution being of suitable character, such as copper sulphate solution as well understood by

those skilled in the art of preparing copper starting sheets. Ordinarily, the solution remains in the tank T at some more or less normal level L at or near which level, during repeated use of the prior art cathode blanks, substantial corrosion 5 takes place with the result that these blanks must be discarded in a relatively short time.

In accordance with the invention, a protective coating is applied to the blank B throughout a limited upper area thereof inclusive of that area 10 coinciding with the normal level L of the electrolytic solution. This protective coating is of such character that it is highly resistant to the corrosive action of the electrolytic solution and, at the same time, is adapted to give long service and 15 to form a surface from which the copper starting sheets may be removed in a satisfactory manner.

As one example of the invention, I have shown the blank B as having on both sides thereof a 20 coating or layer *d* of tin which is suitably applied directly to the copper surface of said blank B after that surface has been thoroughly cleaned. Disposed on this tin layer *d* is a layer *e* of material suitably resistant to the corrosive 25 action of the electrolytic solution. Lead is an example of a metal which may thus be utilized, the lead being suitably applied, as by being burnt thereon by a lead-burner's blow torch.

The height of this two-surface coating may 30 vary within substantial limits as desired. However, in a preferred form of the invention, such coating extends about one-half inch below and one inch above the normal level L of the electrolytic solution.

The tin coating *d* may be of film-like character but, if desired, the lead coating *e* may be of somewhat greater thickness. Furthermore, if 35 desired, the lead coating *e* may be of maximum thickness, such as one-eighth of an inch, more or less, at the top thereof and this degree of thickness may be gradually decreased toward the bottom of said lead coating *e* until, at the extreme coating bottom, it is little more than of film-like thickness.

Thus, as clearly appears from the foregoing description, I have produced a cathode blank which, on its exterior surface at and adjacent the electrolyte level, presents a coating of lead, or equivalent, which is non-corrosive and non-oxidizable 50 with respect to the electrolytic solution. This lead coating adheres to an inner coating of tin, or equivalent, which, in turn, adheres in a satisfactory and efficient manner directly to the copper surface of the cathode blank. Due to the 55

presence of the aforesaid lead coating, it results that the copper cathode blank is protected from corrosion and oxidation and, accordingly, such blanks, as constructed in accordance with my invention, may be used for much longer periods of time than may the cathode blanks of the prior art.

5 The lead member *e*, besides having the highly desirable function described above, is a surface from which the thin sheets of copper may readily be stripped in a satisfactory manner.

10 As shown on the drawing, the cathode blank *B* has channels *f* at the border thereof, these channels being utilizable when the thin sheets of copper are to be stripped from opposite sides of the cathode blank *B*.

15 While the invention has been described with respect to a certain particular preferred example which gives satisfactory results, it will be understood by those skilled in the art after understanding the invention, that various changes and modifications may be made without departing from the spirit and scope of the invention and it is intended therefore in the appended claims to cover all such changes and modifications.

What is claimed as new and desired to be secured by Letters Patent is:

1. A copper electrode having superimposed adhering coatings, the inner coating being formed from tin, and the outer coating being formed from lead, said coatings being adapted to extend below the level of the electrolytic solution in which said electrode is immersed.

2. A copper cathode starting sheet blank comprising an electrode of sheet copper, means for protecting against corrosion the area of said electrode at and adjacent the surface of a body of copper sulphate electrolyte in which said electrode is immersed, said means including a coating of tin adhering to the copper electrode at said area, and a coating of lead adhering to said tin.

3. A copper cathode having superimposed adhering coatings for protecting against corrosion the area of said electrode at and adjacent the surface of a body of electrolyte in which said cathode is immersed, said coatings including an inner coating comprising tin, and an outer coating comprising lead.

JOHN P. DYER.