

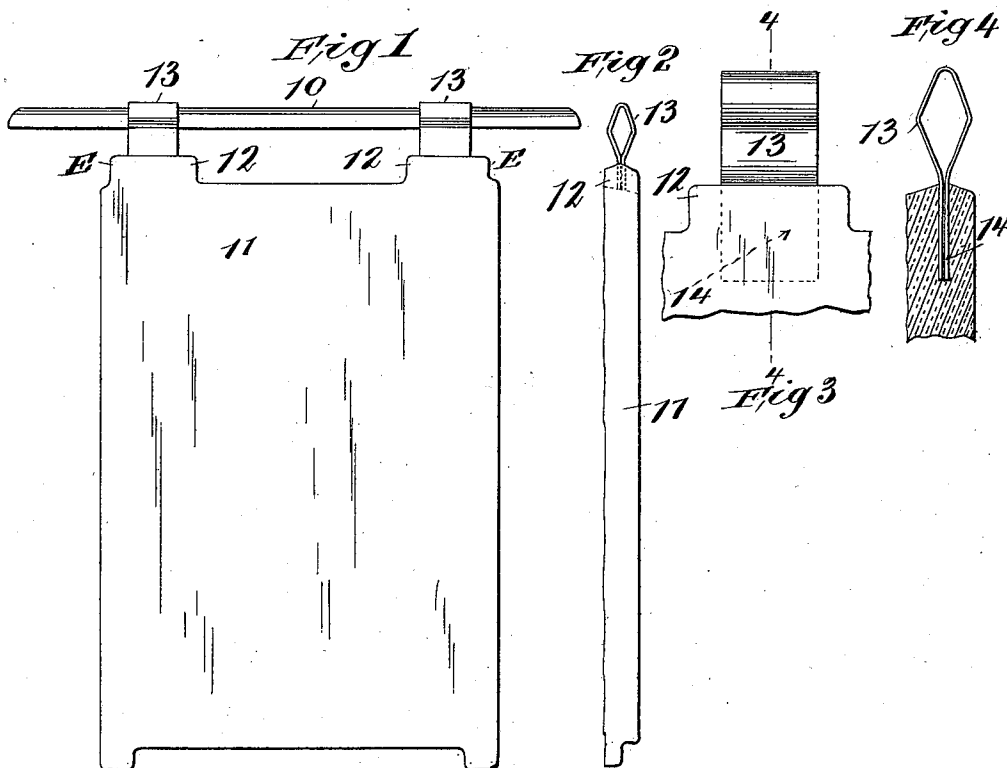
No 621,121.

Patented Mar. 14, 1899.

J. T. MORROW.
ANODE.

(Application filed Apr. 21, 1898.)

(No Model.)



WITNESSES

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JOHN T. MORROW, OF GREAT FALLS, MONTANA.

ANODE.

SPECIFICATION forming part of Letters Patent No. 621,121, dated March 14, 1899.

Application filed April 21, 1898. Serial No. 678,346. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. MORROW, of Great Falls, Montana, have invented certain new and useful Improvements in and Relating to Anodes, of which the following is a description, referring to the accompanying drawings, which form a part of this specification.

The nature and purpose of the invention will be best understood by first considering certain common usages. The anodes in general use at the present day for electrolytic separation and purification of metals are usually constructed with projecting lugs or ears, by which they are secured to the leading-in wires or conductors. In this form of anode a considerable portion of the metal is not exposed to the electrolytic action of the current and the solution, and when the lower portions of the anode have been so corroded as to require removal from the tank the unused portion greatly adds to the amount of material which must go back to the furnace to be remelted and recast. Moreover, in handling groups of anodes the projecting lugs or handles are very much in the way, and in making the electric connection between the lugs or handles and the conductor-bar a bad contact is frequently produced.

The object of the invention is to eliminate these difficulties and at the same time simplify and perfect the construction and use of the anodes.

The accompanying drawings illustrate one preferred embodiment of the invention, though it is by no means limited to the precise forms and proportions therein shown.

Figure 1 is a front elevation of the improved anode suspended from the conductor-bar. Fig. 2 is a side or edge elevation of the same. Fig. 3, is a detailed front view of one of the supporting and connecting clips and its attachment to the anode. Fig. 4 is a side view of Fig. 3, showing the clip in side elevation and the metal of the anode in section on the plane 4 4 of Fig. 3. The anode shown in the drawings is constructed as follows:

Supposing the anode to be used is of copper, it is constructed in the following way: Two loops or clips of thin sheet-copper 13 of the shape clearly shown in Figs. 3 and 4 are formed, the ends 14 lying together, as indicated. By means of suitable molds, which form the subject of a separate application, Serial

No. 681,678, the anode metal is then cast upon these clips, embedding the ends 14 of the clips, as shown in the drawings. The cast portion of the anode consists of the conveniently-shaped main portion 11 and short thick lugs 12, which surround the ends 14 of the clips 13 and project above the surface of the electrolyte, as indicated by the line E E, which corresponds to the proper surface level of the electrolyte when the anode is inserted in the tank. The conductor-bar 10, which may support all or a part of the weight of the anode, is thrust through the loops or clips 13, and good contact is thereby afforded between the clean surface of the loops 13 and the conductor-bar 10 on the one hand and between the ends of the loop 14 and the metal which is cast about them on the other hand. By this simple means I have been able to obviate all the difficulties and inconveniences which I have mentioned. Almost the entire mass of the anode is utilized in the tank, only the light thin clips 13 and a small portion of the lugs 12 being kept above the surface of the electrolyte. Moreover, owing to the cross-section of the lugs 12 where they rise from the surface of the electrolyte there is no danger of the thin supporting and conducting clips 13 being eaten away by the electrolyte. It will also be seen that while the main portion of the anode is of cast metal and in most cases of a more or less impure quality the thin clips 13 may be of tough rolled or electrolytically-deposited material secured to the cast material and having a large area of intimate contact for the passage of current from the clips into the anode.

What I claim, and desire to secure by these Letters Patent, is the following:

1. The anode, consisting of impure cast copper and one or more loops of sheet metal, both the ends of which are secured, by casting, in the impure copper, substantially as set forth.

2. The cast-metal anode supported by one or more pliable sheet-metal loops, both ends of which are secured to the anode proper by being cast therein, substantially as set forth.

In testimony whereof I have hereunto set my hand this 11th day of April, 1898.

JOHN T. MORROW.

Witnesses:

R. S. ATKINS,
EDWARD H. LANG.