

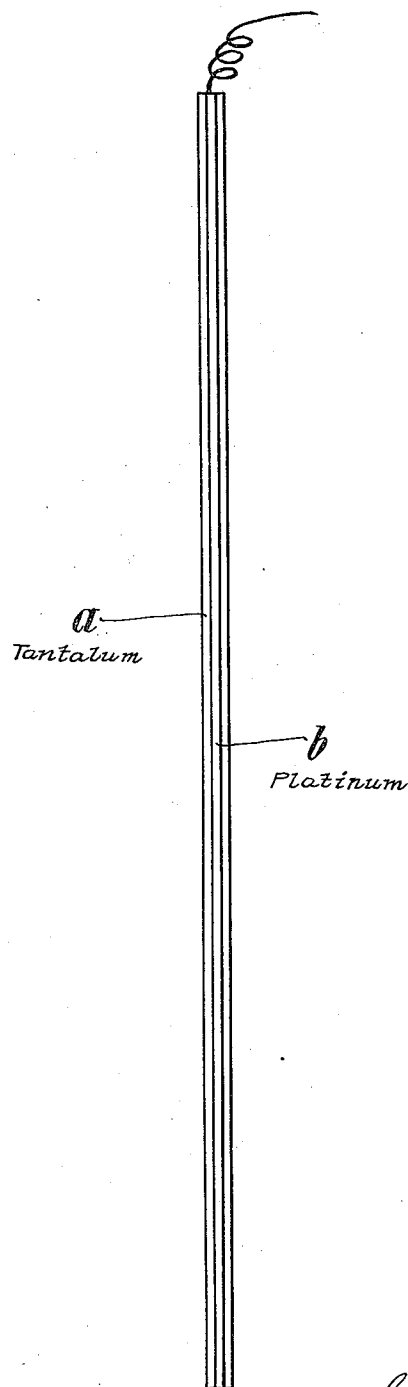
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G. BAUM

ANODE FOR FORMING PERCOMPOUNDS

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ANODE FOR FORMING PERCOMPOUNDS.

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To all whom it may concern:

Be it known that I, GUSTAV BAUM, a citizen of the Republic of Austria, and residing at Weissenstein ob der Drau, Carinthia, Austria, have invented certain new and useful Improvements in Anodes for Forming Percompounds; 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 anodes for forming percompounds, said anodes consisting of tantalum of which the surface is only partly provided with a platinum coating.

For making percompounds heretofore, anodes of pure platinum have been used. Whereas it is sometimes possible to replace platinum cathodes by other metals, for instance, tungsten or tantalum, it had been quite impossible, to use anything but pure platinum as anodes, since the above named metals, as well as any other metal, are either dissolved in the electrolyte or coated with a layer of oxide whereby the circuit is interrupted.

I have, however, shown that it is possible to avoid the above mentioned drawback and to obtain suitable anodes for forming percompounds by manufacturing anodes of a tantalum base and providing this base with a relatively small surface of platinum coating which serves for transmitting the current from the tantalum to the electrolyte.

It is surprising that anodes of the said construction can also be used for forming percompounds, since it is a well known fact that the percompounds are especially sensitive to metal containing catalyzers. The exposure of the surface of tantalum, however, either in the metallic or in oxidized condition has not the slightest injurious effect on the process of formation and on the condition of the percompounds formed.

The use of platinum coating on a tantalum base to such an extent that the whole surface of the tantalum is not coated with platinum is in practice considerably simpler and cheaper than coating the whole tantalum base with the more expensive platinum. The coating can, for example, be effected either by electrolysis, or by hammering, welding, rolling and the like.

In the accompanying drawings an anode

according to the invention is illustrated in front view by way of example.

a designates a base of tantalum, which may be, for instance, 10 mm. in breadth, 500 mm. in length, and 0.2 mm. in thickness. This piece of tantalum is partly coated by a foil of platinum *b*, for instance, by welding the platinum of 3 mm. in breadth and 0.0025 mm. in thickness on the tantalum base and rolling it so as to form a solid piece therewith.

In the following examples two electrolytic processes are described, each process being carried out, once with an anode of pure platinum, the other time with an anode thus obtained show that there is not the least difference whether the first or the second is used.

Examples.

1. (a.) A cylindrical cell of 600 ccm. serves as electrolyzing vessel, a porous cylinder of 200 ccm. as diaphragm. The cathode is formed by a lead coil which at the same time serves as a cooling device. 150 ccm. of a saturated solution of ammonium sulfate is used as anolyte (anodic liquid) sulfuric acid of 45° Bé. as catholyte; the temperature remains below 18° C. The anode is formed of pure platinum the surface of which is about 2 cm²; the current density during the electrolysis amounts to 1 amp/cm². The output is 96.4%.

(b.) The same apparatus is used and the same conditions are maintained, when the platinum anode is substituted by an anode of tantalum, partly coated with platinum. The output is 95%, that is to say the result is practically equal to that obtained with a platinum anode.

2. (a.) The cylindrical cell, diaphragm and lead coil are the same as in the above described example. As electrolyte I use sulfuric acid of 45° Bé., the contents of the anodic cell being 150 ccm. The temperature varies between 18° and 20° C. The anode being of pure platinum and having an area of 5 cm² and the current density being 1 amp/cm² the output amounts to 60.13%.

(b.) If the platinum anode is substituted by an anode of tantalum partly coated with platinum and if the same conditions are maintained the output amounts to 60.55%.

From the above it may be seen that the anode according to my invention is of high commercial value as it is a perfect substitute for pure platinum.

5 I claim:

1. An anode, for forming percompounds, consisting of a tantalum base portion having its surface partially coated with platinum.

10 2. An anode for forming percompounds,

consisting of a tantalum base portion having its surface partially covered with a coating of platinum welded thereto.

In testimony that I claim the foregoing as my invention, I have signed my name.

GUSTAV BAUM.

Witnesses:

ING. CHEM. J. RUMPLER,

ING. ED. PROSZ.