

# UNITED STATES PATENT OFFICE.

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## PROCESS FOR THE ELECTRIC DISSOCIATION OF METALS BY THE WET METHOD.

No. 923,864.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed February 3, 1908. Serial No. 414,005.

*To all whom it may concern:*

Be it known that I, ALFRED LEVY, a citizen of the Republic of France, and resident of Paris, France, have invented certain new and useful Improvements in Processes for the Electric Dissociation of Metals by the Wet Method, of which the following is a specification.

It is a well known fact that metal articles intended to receive metallic deposit in an electrolytic bath must previously be freed from greases and impurities which may adhere to them in consequence of the preceding stages of manufacture. Therefore two successive but different operations are required. The first of which—the cleaning—demands a great deal of time and care.

My invention relates to a process by which it is possible to carry out both operations at the same time, no matter what the metal or alloy of which a deposit is desired, whether silver, tin, copper, zinc, nickel, brass or the like.

The following is a description of the process: The metal articles are used as a cathode in a bath made of a concentrated solution of an alkaline substance, soda, potash and the like with a slight addition of an alkaline cyanid, and at the same time an anode is employed, made of the metal or alloy intended to be deposited. The latter ingredient added to the bath may vary according to the nature of the material to form the deposit. For instance, for coppering excellent results have been found from the use of a quantity of cyanid corresponding to one tenth of the alkaline salt used. In place of cyanids other alkaline salts may be used as additions to the alkaline solution, such as chlorids or iodids and the like. In these cases however a suitable solvent, such as alkaline sulfites or hypsulfites, must also be added to the electrolytes. These latter ingredients may also be added jointly with cyanids as addition to the alkaline substance. The same result may likewise be obtained when an alkaline phosphate or pyrophosphate is used with or without an addition of alkaline sulfites or hypsulfites as addition to the alkaline solution. The passage of the current through such an electrolyte effects, in the first place, the complete removal of grease from the metal articles serving as the cathode and at the same

time, owing to the attack of the anode, results in the formation of the necessary electrolyte for the subsequent metallic deposit on these articles. Therefore this bath must be under current for some time before it supplies satisfactory deposits; nevertheless the result may be obtained immediately if instead of the whole or part of the alkaline cyanid a like quantity of the corresponding metallic cyanid, metallic chlorid, iodid, and the like, metallic phosphates and pyrophosphates are used. The same substitution of the corresponding metallic salt can be made when using a chlorid, iodid, and the like, a phosphate or a pyrophosphate, as already mentioned.

The process described has the advantage that the cleaning of the articles and the galvanic deposit takes place successively in one and the same bath, and besides that the formation of the metallic salts required for the deposit takes place in the bath itself when the metal anode is used, and thus does away with the necessity of using the very expensive pure metal salts for producing the electrolytes.

What I claim and desire to secure by Letters Patent of the United States is—

1. An electrolytic process of cleaning metal articles and subsequently coating them with metal which includes placing the article to be coated in a bath consisting of a 10% to 20% alkaline solution containing a metallic salt, placing in the solution a quantity of the metal with which the article is to be coated, and connecting both the article and the coating metal to a suitable source of electricity; the former as the cathode and the latter as the anode.

2. An electrolytic process for cleaning metal articles and subsequently coating them with metal which consists of placing the article to be coated in a bath consisting of a concentrated alkaline solution and an alkaline salt, placing in the solution a quantity of the metal of the kind of which the coating is to be formed, and connecting both the article and the coating metal to a suitable source of electricity, the former as the cathode and the latter as the anode.

3. An electrolytic process for cleaning metal articles and subsequently coating them with metal which consists of placing the

article to be coated in a bath consisting of a concentrated alkaline solution and an alkaline cyanid, placing in the solution a quantity of the metal of the kind of which the  
5 coating is to be formed, and connecting both the article and the coating metal to a suitable source of electricity, the former as the cathode and the latter as the anode.

In testimony whereof I have signed my name to this specification in the presence of 10 two subscribing witnesses.

ALFRED LEVY.

Witnesses:

ALEXANDER WAERBER,  
EMILE BACHING.