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PROCESS OF FORMING FLOTANT METAL POWDERS

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My invention relates to processes of forming metal powders which can be used without further preparation in forming floating metal films adapted to be integrated into foils by the action of an electric current.

It has been discovered that, when a metal film can be made to float on an aqueous electrolyte and is then used as a cathode in conjunction with a proper anode, that instead of the film being disrupted and sinking with the passage of a direct or unidirectional electric current, a sort of fusion of particles takes place, forming a floating and coherent foil, which can be electroplated upon, then removed and further treated, if necessary, producing very thin foils in a very inexpensive manner.

It is the object of my invention to provide a metal powder having the required characteristics of being flotant upon an electrolyte.

I find that by proceeding according to my invention a powder is produced which will not only itself float, but when used on an electrolyte in which the original powder has the characteristic of replacing the metal in the salt of the electrolyte used, the replaced metal will be found to float on the surface in the place of the original powder laid thereon.

I first prepare a powder of the desired metal or mixed metals and keep it clean and dry. I then moisten the powder with benzol using no more than enough to be assimilated with the powder, (for purposes of economy.)

The next operation is to dry the metal powder which is done at a temperature kept low enough to prevent an oxidization of the metal.

The resultant product, with the benzol evaporated off will be found to possess the desired characteristics and will float on the usual electrolytes used in plating the metal in question.

The floating characteristic will be found to be quite permanent and an acid cleaning treatment of the powder will not destroy the floating characteristic.

If for example, I produce an iron powder with the benzol treatment and drying as noted, and then deposit it upon a copper electrolyte, I find that the iron rapidly disappears and the copper forms in its place. This powder when lifted off and dried in a gentle heat will be found to retain its floating characteristics for a considerable period.

I have already noted one method of use of my novel powders namely, forming a foil by electrolytic action. While not the basis of this invention, I may state that with a proper aqueous electrolyte, preferably of acid or neutral character, and an anode of suitable character for plating out of the said electrolyte, the operator may form an excellent foil of copper, for example, quite rapidly and continuously by applying a direct or unidirectional current to the anode and to the floating film as a cathode. The current found useful by me will be around one to two amperes per square inch of the floating film, with voltages from two volts and upwardly.

Also by depositing the metal powder on an aqueous surface and passing through the resulting film a body which has an adhesive surface, of water repellent nature, I find that a metallic film of very thin character and even distribution can be formed on the said body. By referring to floating metal powders I refer to powders which will float on a liquid of less specific gravity.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. That process of producing floating metal powders which consists in treating a dry powdered metal with a volatile oily liquid, and then evaporating off the liquid, then depositing the powder on a water solution of salt of a metal, which the powder in question will replace in said solution, and finally consolidating the resultant powder into a foil on the surface of the solution.

2. That process of forming a floating powder of a metal which consists in forming a water solution of a salt of the said metal, and then depositing on the surface of the said solution a floating powder of a metal which will replace the said metal in said salt, thereby forming a floating powder of the metal in said salt on the surface of said solution.

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