UNITED STATES PATENT OFFICE.

EDWARD WESTON, OF NEW YORK, N. Y., ASSIGNOR TO STEVENS, ROBERTS & HAVELL, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN THE MANUFACTURE OF ANODES FOR NICKEL-PLATING.

Specification forming part of Letters Patent No. **166,433**, dated August 3, 1875; application filed July 10, 1875.

To all whom it may concern:

Be it known that I, EDWARD WESTON, of New York, in the county of New York and in the State of New York, have invented certain new and useful Improvements in Anodes or Positive Electrodes for Electro-Plating; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, making a part of this specification.

My invention relates to a new process for forming an anode or positive electrode to be used in the process of electro-deposition, and is especially useful in the case of metals which melt at high temperatures, or are difficult of fusion, such as cobalt or nickel.

The nature of my invention consists in a process for forming an anode or positive electrode, in which the particles of metal are mixed with a suitable cement, so as to form a solid mass, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, which represents a perspective view of my improved anode.

In the construction of my anode, the particles of metal *a a* are cemented together, so as to form a solid, compact mass, offering little resistance to the passage of the current, and exposing a suitable surface to the action of the electrolyte.

The cement *b* must not be affected by the solution, and should be capable of holding the particles firm enough to withstand the handling which the anodes will be subjected to in use. For this purpose I prefer to use a mixture of powdered carbon and molasses, or some other substance capable of forming a coherent paste. To this paste the metal is added in fine powder, granules, or fragments, and the mass thus obtained should be placed in molds and subjected to pressure, dried, and then baked out of contact of the air until the mass is thoroughly carbonized, and a solid, compact, coherent mass is obtained.

The anode thus formed is an excellent conductor of electricity, and answers the purpose admirably.

Oxide, carbonate, or any other compound may be mixed with the carbon-paste instead of the metal; but I prefer to use the metal.

The proportions of the various substances will vary according to the degree of fineness of the carbon or the metal; but the paste should be made as stiff as possible, and as much metal added as it will take without being too fragile.

Other substances may be used, and the metal connected in any way that may seem best.

This form of anode is cheaply and easily made. The resistance is less than in those forms of anode in which the particles of metal are simply spread upon the surface of a conducting-plate, since the particles of metal are held firmly together, and are entirely surrounded in the carbon; consequently a much weaker current may be employed, and the operation of plating, &c., will take less time.

The fine particles of metal which, in other forms of anode, gradually detach themselves from the main body of the metal, and either fall to the bottom of the vat and are lost, (as in the case of cast anodes,) or prevent the perfect contact of the particles of metal, and thus increase the resistance, cost, and time of depositing the metal, as in that form of anode in which the particles are placed upon the surface of a conducting-plate, is entirely avoided.

The finest dust can be used in the preparation of ~~these anodes~~, and, consequently, the anodes can be powdered, mixed with molasses, pressed, and baked, and used again and again, until nearly all the metal is used up, or more metal can be added.

I do not wish to be understood as claiming an anode consisting of a carbon plate having particles of nickel united to the outer surface thereof, as such is not my invention.

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

A process for forming anodes for electro-plating, consisting of mixing particles of metal with a cement when in a plastic state, and then molding, pressing, and baking the mass to form a solid body of the required size and shape, substantially as herein set forth.

In testimony that I claim the foregoing, I have hereunto set my hand this 26th day of June, 1875.

EDWARD WESTON.

Witnesses:
A. B. JOHNSON,
F. STEVENS.