UNITED STATES PATENT OFFICE.

SHERARD OSBORN COWPER-COLES, OF LONDON, ENGLAND.

MANUFACTURE OF ZINC-DUST.

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To all whom it may concern:

Be it known that I, SHERARD OSBORN COWPER-COLES, a subject of the King of Great Britain, residing at Grosvenor Mansions, 82 Victoria street, Westminster, London, England, have invented new and useful Improvements in the Manufacture of Zinc-Dust; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a process for the economical manufacture of what is commercially known as zinc dust, zinc fume, tultz powder and incidentally to the recovery of copper and zinc from their alloys.

According to my invention I deposit zinc upon a rotating cathode under such conditions as will insure the said zinc being deposited in a spongy form. To this end I advantageously employ an electrolyte composed of hot or cold caustic soda solution and anodes of iron or an alloy of zinc and iron known as hard zinc, the zinc sponge being deposited upon an iron disk which is caused to rotate slowly and being removed therefrom continuously by means of one or more scrapers; the current employed may have a density of several hundred amperes per square foot.

The electrolyte may be regenerated in a separate chamber or vessel and I have found that an economical form of zinc is either scrap zinc or what is known as hard spelter obtained from the baths of hot galvanizing works. The bars or slabs of zinc are suspended in the baths or tanks and the zinc deposited upon the iron electrode.

In the process of regeneration a considerable amount of electric current is generated if the hard zinc is coupled to an electro-negative metal such as lead and this may be used for a variety of purposes. For example, I have found that it can be utilized for the recovery of zinc and copper from impure zinc-copper alloys as a low voltage and current density are sufficient for this purpose. A convenient form of electrolyte for this object is sulfuric acid, the impure brass to be treated being placed in this electrolyte and in connection with the positive pole of the electric generator composed of the zinc-lead couples above referred to. The copper is deposited at low current density on suitable cathodes and the zinc sulfate which is formed may be evaporated down to crystals or the zinc may be deposited by electrolysis.

Zinc dust produced in the manner above described is superior to ordinary commercial zinc dust which is obtained from the flues of zinc distillation furnaces and is also very suitable for use in the process known as Sherardizing. In practice it is found necessary to dry the zinc dust in a reducing atmosphere to prevent the formation of too much zinc oxid.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A process for the production of zinc dust, consisting in electrodepositing zinc in a spongy form and subsequently drying the said spongy zinc in a reducing atmosphere.

2. A process for the production of zinc dust, consisting in electrodepositing zinc from a caustic soda solution upon a revolving disk upon which the zinc is deposited in the form of a sponge and is continuously removed, and in then drying the spongy zinc so produced in a reducing atmosphere.

SHERARD OSBORN COWPER-COLES.

Witnesses:
C. G. REDFERN,
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