

UNITED STATES PATENT OFFICE.

LOUIS S. HUGHES, OF JOPLIN, MISSOURI, ASSIGNOR OF ONE-HALF TO HIMSELF AND ONE-HALF TO PICHER LEAD COMPANY, OF JOPLIN, MISSOURI, A CORPORATION OF MISSOURI.

PROCESS OF MAKING LEAD SALTS.

1,008,412.

Specification of Letters Patent.

Patented Nov. 14, 1911.

No Drawing.

Application filed June 19, 1909. Serial No. 503,046.

To all whom it may concern:

Be it known that I, LOUIS S. HUGHES, a citizen of the United States of America, residing in Joplin, in the county of Jasper, in the State of Missouri, have invented a certain new and useful Improvement in the Production of Lead Salts, of which the following is a true and exact description.

The object of the present invention is a simple, effective and relatively inexpensive method of commercially producing various lead salts, characterized on the one hand by the purity of the salts produced, and on the other hand by the effective use, as a lead yielding raw material, of a by product of lead smelting and other lead and lead ore treating plants which, in the case of most of such plants, is practically a waste product.

The lead yielding raw material which I use is the so called waste lead, or blue fume, and I prefer that given off from open hearth lead smelting furnaces on account of its high basicity. This fume is composed principally of lead sulfid, lead sulfate, finely divided unconsumed carbon and some lead oxid. This fume I first subject to a strong oxidizing action, either by burning it in a kiln, or (as is possible in the majority of cases), by setting fire to it in a heap and allowing it to burn of itself, which it does on account of its unconsumed carbon and sulfur contents. The fume thus burned contains a large amount, usually over forty per cent., of lead oxid which behaves toward acid solvents as if it were free litharge. I then digest the burned fume in a suitable hot acid whereby the lead oxid is dissolved. The acid used may be nitric, acetic or other acid yielding soluble lead compounds.

To facilitate the digestion of the burned fume it may be broken up when necessary into particles of suitable fineness before treatment with the acid. The liquor pro-

duced by digesting the burned fume as described, is separated from the subsident residue of insoluble sulfate or other insoluble compounds preferably by decantation. This insoluble residue may be returned to the ore treating furnace or otherwise disposed of as may be desirable. From the decanted liquor the desired lead salts may be obtained through crystallization or precipitation by any suitable known method. Among the salts which may be produced in this manner are the following: chromate, acetate, nitrate and arsenate.

The lead salts thus made are not only produced readily at a relatively low cost but are unusually free from impurities since the fume from which they are made, being a sublimate, is free from the bases usually contaminating pig lead such as bismuth, copper, tin, etc., and contains little silver.

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

1. The method of commercially producing relatively pure lead salts from lead fume which consists in burning the fume to oxidize it, treating the oxidized fume with acid to dissolve the lead oxid contained in the oxidized fume, separating out the undissolved residue and then separating a lead salt or salts from the solution into which the lead oxid was dissolved by solidifying said salt or salts.

2. The method of commercially utilizing waste lead fume which consists in burning the fume to oxidize it, treating the oxidized fume with acid to dissolve the lead oxid contained therein, and separating out the undissolved residue.

LOUIS S. HUGHES.

Witnesses:

J. EDWARD WEBB,
JERE CHARLOW.