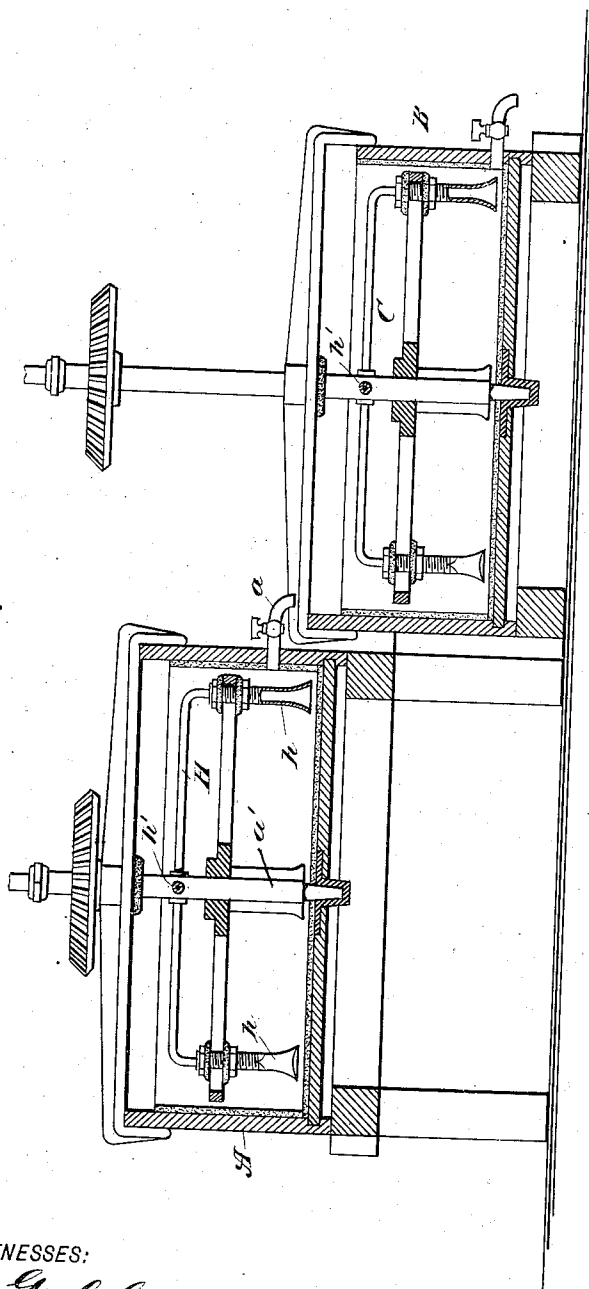


(No Model.)

J. W. COGHLAN.
PROCESS OF FORMING OXID OF LEAD.

No. 552,102.

Patented Dec. 31, 1895.



WITNESSES:

WITNESSES:
William Goebel.
F. S. Kennedy.

INVENTOR

John W. Coghlan

BY

George Cook

ATTORNEY.

UNITED STATES PATENT OFFICE.

JOHN W. COGHLAN, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE ALBRIGHT WHITE LEAD COMPANY, OF NEWARK, NEW JERSEY.

PROCESS OF FORMING OXID OF LEAD.

SPECIFICATION forming part of Letters Patent No. 552,102, dated December 31, 1895.

Application filed April 12, 1895. Serial No. 545,100. (No specimens.)

To all whom it may concern:

Be it known that I, JOHN W. COGHLAN, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Processes for Forming Oxid of Lead, of which the following is a specification.

My invention relates to an improved process for transforming metallic lead into an oxid of lead, the object of the invention being to provide a process whereby the use of acids may be entirely omitted and the time required to complete the process of making such oxid materially shortened, the product at the same time being perfectly free from the metallic lead.

With these and other ends in view my invention consists in first agitating in a suitable vessel a quantity of lead in a fine, comminuted or granulated state, in the presence of air and water, whereby the same will be pulverized or powdered and a portion thereof partially oxidized, and, secondly, withdrawing said powdered and partially-oxidized lead into a second vessel and there completing the oxidation by agitation in the presence of water and an oxidizing-gas.

The process further consists in certain novel features hereinafter fully described, and pointed out in the claims.

The accompanying drawing shows one form of apparatus which may be used for carrying out the process, but I would have it understood that I do not limit my invention to this or any other particular form or construction of device, as the latter may be varied or changed in structure in many ways to accomplish the same results.

In practice the pig or metallic lead is first treated in any desired manner to reduce it to a fine, comminuted or granulated state, in which condition it is emptied or fed into the first tank A, constructed of any suitable size or shape, and provided with an outlet *a* to allow of a portion of its contents being withdrawn into a second tank or vessel B, which may be constructed in substantially the same way as the tank A.

Within the tank or vessel A is located a re-

volving device consisting of several radial arms II, from which depend arms or plows *h*, said radial arms and plows being hollow. This revolving device is connected with a hollow shaft *a'*, having openings *h'* leading into the arms II.

After a sufficient quantity of water and comminuted lead has been fed into the vessel or tank A, the revolving shaft with its attached arms and plows is rapidly revolved, a current of air at the same time being forced through the hollow shaft *a'* and into and throughout the mixture through the arms II and hollow plows *h*, the effect being that the lead and water is kept in a state of violent agitation, the purpose and effect of which is to cause the particles of lead to rub and grind against each other until they are reduced to a finely pulverized or powdered condition, the introduction of the air into and throughout the mass causing a partial oxidation of the pulverized lead. At a proper time the finer or powdered and partially-oxidized lead is drawn from the first into the second tank or vessel B, in which is located a revolving device C, constructed, if desired, in the same way as that located in the tank A. In withdrawing the mixture from the first into the second vessel care should be taken that no metallic lead follow—that is, no metallic lead other than that which is very finely pulverized and capable of being oxidized in the second vessel. If the apparatus be of such form or structure that there is likely to be some of the larger or coarser particles drawn from the first vessel, I advise that instead of withdrawing the mixture from the first tank directly into the second that such mixture be fed from the first vessel into a filter or separator (not shown) constructed in any suitable or desired manner, in order that such coarser particles may be prevented from entering the said second vessel. From such filter or separator the coarser particles may be returned to the first tank for further grinding or pulverizing, while the finer or pulverized and partially-oxidized lead may be fed from said filter into the second vessel B. In the latter the partially-oxidized lead and water is again violently agitated by the revolution of

the hollow shaft and plows contained therein, this agitation continuing for a suitable length of time—that is, until the oxidation of the lead is completed—a current of air or an oxidizing-gas—as, for instance, oxygen itself—being introduced into and throughout the turbulent mass through the hollow shaft, arms, and plows, as in the first tank, this whirling or agitation and simultaneous introduction of the oxidizing-gas causing the complete oxidation of every particle of metal.

By carrying out this process I have found in practice that a complete oxidation of the metal takes place in a few hours, the product being superior to that which has heretofore been produced by the “acid process,” said product being completely free from metallic lead and those acids which cause a crystallization of the particles, thereby rendering it superior for the production of chrome, carbonate of lead, &c.

I am aware that attempts been made to form an oxide of lead by grinding or pulverizing it in the presence of air and water, but so far as I am aware these attempts have proved unsuccessful, in that it has been impossible to free the product from metallic lead. The defects in such prior processes I have learned by experiment lay in the manner of introducing the air into the mass and also in the fact that in these attempts it was endeavored to grind or pulverize and oxidize in a single vessel. I therefore disclaim these prior processes, the gist of my present invention lying in the agitation of the comminuted or granulated lead in the presence of water, air being simultaneously introduced into and throughout the mass, for the purpose of pulverizing or

powdering and partially oxidizing the lead; secondly, again agitating this partially oxidized lead and water and simultaneously introducing into and throughout the mass an oxidizing-gas while in a second vessel; and

Hence what I claim as new, and desire to secure by Letters Patent, is—

1. The process of making an oxide of lead consisting in first agitating in a suitable vessel metallic lead in a comminuted form in the presence of water, and simultaneously introducing air into and throughout the mass, for the purpose of pulverizing and partially oxidizing the same, secondly, separating the pulverized and partially oxidized lead from the coarser particles of metallic lead and again subjecting it in a second vessel to further agitation in the presence of water simultaneously with the introduction of an oxidizing gas into and throughout the mass for completing the oxidation, substantially as described.

2. The process of making an oxide of lead consisting in first agitating in a suitable vessel metallic lead in a comminuted form in the presence of air and water for the purpose of pulverizing and partially oxidizing the same; secondly, filtering the pulverized and partially oxidized lead from the metallic lead and thirdly, subjecting said pulverized and partially oxidized lead to agitation in the presence of water and an oxidizing gas.

Signed at New York, in the county of New York and State of New York, this 8th day of April, A. D., 1895.

JOHN W. COGILAN.

Witnesses:

GEORGE COOK,
JOHN F. FLAGG, Jr.