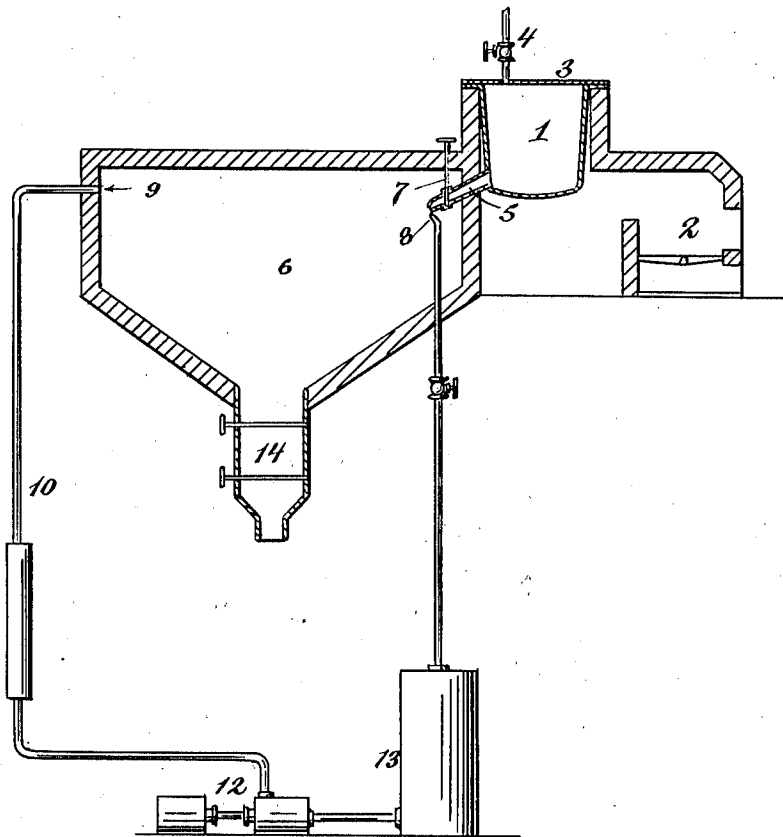


C. ELLIS.
PROCESS OF MAKING FILAMENTOUS LEAD.
APPLICATION FILED JAN. 27, 1908.

953,196.

Patented Mar. 29, 1910.



Witnesses:

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PROCESS OF MAKING FILAMENTOUS LEAD.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CARLETON ELLIS, a citizen of the United States, residing at Larchmont, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Processes of Making Filamentous Lead, of which the following is a specification.

This invention relates to the process of treating metallic lead to put it in the form of a finely divided filamentous material preferably substantially unoxidized, for the purpose of subsequently oxidizing and carbonating, to make white lead pigment and other lead pigments.

The customary method of treating lead in the so-called rapid process of lead corrosion, is to force molten lead through small orifices to produce fine cylindrical rods of the metal, which are subsequently subjected to corrosion. It has also been suggested that the lead be deposited electrically to produce a spongy material which may be rapidly oxidized to produce pigments. Neither of these processes afford a material which is capable of being oxidized with extreme rapidity to form a perfectly pure and clean pigment.

The present invention has for its particular object the production of filamentous lead which is capable of being corroded with extreme rapidity to make a pigment having the high degree of opacity and pigmentary properties desired.

In carrying out my invention, I put the lead into a super-molten condition, by heating in a suitable receptacle to approximately 200° above the melting point of the lead, and force said molten lead in a fine stream past a jet of inert gases issuing from an orifice under pressure. The gases which I prefer to employ are those which are derived from the initial oxidation of lead by passage of air thereover, so as to produce an atmosphere consisting largely of nitrogen. This I accomplish by allowing the stream of molten lead to be impinged upon by the jet in a closed receptacle, withdrawing the gases from said receptacle and forcing them by means of a suitable blower or compressor through the jet orifice.

By referring to the accompanying drawing, the manner in which my invention is carried out, will be evident.

In the drawing, 1— represents a lead melting pot having the heating furnace —2.

The melting pot is preferably closed by the cover —3, through which air under pressure may be introduced, if desired, through the pipe —4; 5— is a pipe leading from the bottom of the melting pot —1, into a closed chamber —6; this pipe is fitted with the valve —7; at 8— is situated a jet nozzle, through which the gases under pressure enter. The intake of these gases is at —9, from which, by means of the system pipe —10, cooler —11, compressor —12 and chamber —13, the gases are forced through the jet nozzle.

14— is a dampered hopper for the removal of the filamentous lead.

In operating the apparatus in accordance with my process, the lead, when suitably melted, is allowed to discharge into the closed chamber, while the compressor is in operation, thereby breaking up the lead stream and causing the lead to take a filamentous form. This lead material deposits on the floor of the closed receptacle and is removed by operating the dampered hopper. When the apparatus is first put into operation, if the chamber is filled initially with air, some oxidation of the very first portion of the lead entering the chamber occurs, and this material may be rejected, if desired. Very soon, however, the atmosphere of the chamber becomes so impoverished as regards its content of oxygen, that further oxidation of the lead does not take place, and the metal is thrown into a filamentous condition, clean and free from superficial oxidation. If desired, the receptacle at the start may be filled with an inert gas, such as nitrogen products of combustion, producer gas, and the like. The process may be made continuous, by having several melting pots, so that when one is emptied, another pot may immediately be caused to discharge into the filamentary chamber. In using producer gas as the inert gaseous fluid, it is desirable to wash same thoroughly, which may be accomplished by means of a suitable scrubber; as otherwise particles of carbon or tar might contaminate the lead product.

The lead is preferably injected into the filamenting chamber in a super-molten condition, as under such circumstances, the filaments produced are excessively fine and are far more susceptible to the white lead corroding process. When the lead is introduced at a temperature only a few degrees

above the melting point of the metal, the filaments are coarser. A temperature of at least 200 degrees above the melting point is therefore to be recommended, as with such temperatures the metal is in the proper supermolten condition for filamenting. The filamentous lead so produced may then be subjected to corrosion in pots, such as are used in the Dutch process, or treated, or corroded, in any other suitable manner.

By using a current of air only, the lead may be oxidized largely to red lead, or litharge, producing pigments, when further corroded, having unusual shades of color.

Owing to the temperature of the gases withdrawn from the filamenting chamber, it is often times desirable to introduce a cooler in the pipe line leading to the compressor. Steam may be used in whole or in part in the filamenting chamber, as the gaseous filamenting fluid, in which case when superheated steam and lead in a highly super-molten condition are used, oxidation takes place to some extent, producing a superficially oxidized lead filament.

To recapitulate: My invention consists in the treatment of molten lead preferably in a super-molten state with an impinging jet of gaseous fluid, preferably of an inert character, to produce metallic lead in a filamentous condition.

Having described my invention, to the details of which description, I do not, of course, wish to be limited, what I claim as my invention is:—

1. The process of making an easily oxidizable lead which consists in exposing a stream of metallic lead in a super-molten condition to a jet of compressed inert gases,

whereby lead in a filamentous condition is produced.

2. The process of making easily oxidizable lead, which consists in subjecting super-molten lead to a jet of compressed gases, whereby the metal is converted into material of a filamentous character.

3. The process of making easily oxidizable lead, which consists in subjecting a fine stream of super-molten lead to the filamenting action of an impinging jet of inert gases under pressure in a closed receptacle, whereby lead in a finely divided filamentous condition is produced.

4. The process of producing easily oxidizable lead material, which consists in subjecting a fine stream of melted lead in a super-molten condition to the filamenting action of a jet of compressed inert gases, directed into impingement upon said lead stream; said gases being derived from the gaseous products resulting from the prior passage of air through said lead material: whereby finely divided filamentous lead is produced.

5. The process of making easily oxidizable lead, which consists in subjecting super-molten lead at a temperature approximating 200° above its melting point to the impinging action of a jet of compressed inert gas, whereby the metal is converted into material of a filamentous character.

In testimony whereof I have affixed my signature in presence of two witnesses.

CARLETON ELLIS.

Witnesses:

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