

UNITED STATES PATENT OFFICE.

FARNHAM MAXWELL LYTE, OF COTFORD, OAKHILL ROAD, PUTNEY,
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PROCESS OF MAKING BASIC LEAD SALTS.

SPECIFICATION forming part of Letters Patent No. 396,703, dated January 22, 1889.

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To all whom it may concern:

Be it known that I, FARNHAM MAXWELL LYTE, at present residing at Cotford, Oakhill Road, Putney, in the county of Surrey, England, analytical chemist, have invented a new and useful manufacture of basic sulphate of lead and basic chloride of lead and basic forms of the other insoluble or sparingly-soluble salts of lead, so as to render them fitted for use as white pigments, of which the following is a full, clear, and exact description.

It is generally admitted that the covering power of white lead, when used as a paint, and its faculty of blending with oil is (partly, at least) due to its basicity. The same peculiarity, however, generally extends to the other insoluble or sparingly-soluble lead salts—such, for instance, as the sulphate and chloride—and I have found that these may be brought to any required degree of basicity by digestion in a boiling solution of a basic lead salt—such, for instance, as the basic lead acetate or nitrate.

My invention therefore consists in a process of digesting with boiling the insoluble or sparingly-soluble normal lead salts in a solution of one of the soluble basic salts of lead, whereby such normal salts are rendered basic and fitted for use as white pigments, this process being conducted in such a manner that a manufacturer is enabled to obtain with certainty a definite degree of basicity at each successive operation.

I will take, for example, the treatment of lead sulphate, merely premising that I do not limit myself to this salt, but that the method described is a general one and equally applicable to the chloride, the carbonate, the phosphate, and other of the insoluble or sparingly-soluble lead salts. I take, say, about four hectoliters of basic lead acetate of specific gravity 1.315 at 15° centigrade, (which may be made, for instance, by repeatedly pouring a normal lead-acetate solution of, say, specific gravity 1.15 at 15° centigrade over finely-divided lead, or by any other of the known methods,) and I precipitate the said four hectoliters with, in this case, sulphuric acid until the liq-

uid becomes so slightly acid that it will hardly turn litmus plum color. I then heat this acidulated liquor, (say to boiling,) thereby promoting more rapid subsidence, and after allowing about an hour for the precipitate to settle I decant the acidulated supernatant liquid, which may be again rendered basic and fit for use over again as basic lead acetate by pouring it over the finely-divided lead, with the addition of acetic acid, if necessary. To the precipitated lead sulphate I then add a further quantity (say two hectoliters, more or less, according to the basicity required) of the same basic acetate—that is to say, having first precipitated all the extra base out of four hectoliters, I then add to the precipitate such an amount of the same or a similar basic liquor which contains the same amount of extra base as may be necessary to impart the required degree of basicity to the precipitate, and I then proceed to boil the whole and continue boiling and stirring for about from a quarter to half an hour or so. By this time it will be found that the precipitate has attained its right degree of basicity, the added liquor having lost most of its extra base, while a greater density and more rapid separation from the liquor is obtained.

I would have it, however, understood that I do not limit myself to any of the specific gravities or quantities herein given, as although I find them to answer well they may evidently be varied as required without varying the principle of working by volumes, on the application of which, as well as on the employment of boiling, this patent is founded.

I would here remark that it is absolutely necessary to bring the solution to or nearly to a boiling-point, mere heating being useless for the purpose in view till the boiling temperature, or near it, is reached. I may also add that a sulphate, chloride, or other salt of lead not specially prepared (such, for instance, as the sulphate produced in the manufacture of acetate of alumina from acetate of lead) may be rendered basic by boiling in a soluble basic lead salt.

Salts of lead thus treated may be washed

and dried in the usual manner; but instead of this the requisite quantity of oil may be added direct after expelling the greater part of the moisture, (by, say, a filter-press,) when, 5 as has been found with other basic salts of lead on being mixed together, (say in a pug or stirrer,) the oil will combine with the lead, and, saponifying, expel the acetate or water, as the case may be. This pigment can then 10 be ground or passed through rollers and further washed, if desired.

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

15 1. The herein-described process of rendering basic in a definite predetermined degree the insoluble or sparingly-soluble lead salts, which process consists in first precipitating the extra base out of a given volume of a so-

lution of basic lead acetate, and then boiling 20 the precipitate with such a volume of the same or a similar basic liquor as will impart the desired degree of basicity to the precipitate, as specified.

2. The process herein described of render- 25 ing insoluble or sparingly-soluble lead salts basic, consisting in first treating basic lead acetate with sulphuric acid to precipitate the extra base out of the same, then rendering the precipitate basic by the addition of basic 30 lead acetate, and finally boiling the mixture, as set forth.

FARNHAM MAXWELL LYTE.

Witnesses:

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AL. MAXWELL LYTE,

Both of Cotford, Oakhill Road, Putney.