

UNITED STATES PATENT OFFICE.

THOMAS CRISP SANDERSON, OF LONDON, ENGLAND.

TREATING WHITE LEAD.

SPECIFICATION forming part of Letters Patent No. 664,437, dated December 25, 1900.

Application filed December 5, 1898. Serial No. 698,361. (No specimens.)

To all whom it may concern:

Be it known that I, THOMAS CRISP SANDERSON, chemist, a subject of the Queen of Great Britain, residing at Brooklyn, Westcombe
5 Park, London, England, have invented a new and useful Improvement in Treating White Lead, (for which I have obtained Provisional Protection in Great Britain, No. 11,447, dated May 19, 1898, and No. 11,522, dated May 20,
10 1898, respectively,) of which the following is a specification.

My invention consists in an improvement in treating white lead, especially that produced by precipitation, but also applicable
15 to white lead produced by other methods.

The process is especially adapted to further treating white lead which has been produced by the process set forth in my United States Patent No. 613,316, dated November 1, 1898—
20 namely, by cumulative precipitation from a solution of the basic acetate of lead.

The further treatment of white lead after its formation by any process usually involves the filtering, washing, and drying of the material before the same can be ground in oil in
25 the usual manner. These operations are more or less costly; but the chief objection to them consists in the highly-injurious dust which is thereby formed and which has very
30 prejudicial effects upon the health of the work people.

The object of my present application is to provide a commercially valuable and practicable means whereby the white lead can be
35 treated from its first formation to the final grinding with oil without the necessity of bringing it into the dry state, and thus enabling it to evolve dust.

At the completion of the precipitating operation, when white lead is produced by the process mentioned above, it is in the condition of a fine precipitate suspended in a weak solution of normal acetate of lead of a slightly acid reaction. It is especially to be noted
45 that normal or slightly acid solution of lead acetate does not saponify linseed-oil, whereas a basic acetate does. Consequently a basic solution is to be avoided in this process. Such saponification, as is well known, renders the
50 oil soluble in water, and consequently liable

to be gradually removed by the action of the weather, causing the destruction of the coating of paint. The precipitate is separated as completely as possible from the mother-liquor by filtering, settling, or by treatment in a
55 centrifugal machine. I prefer to use either a settler, into which the solution, with its suspended white lead, is continuously run, the clear solution passing off by a channel at the top, while the settled pulp is discharged from
60 an opening at the bottom, or a centrifugal machine, in which a similar separation is continuously produced, pulpy white lead being discharged by an aperture at the periphery of the cage, while clear solution passes away over
65 a lip nearer the center. By either of these means the handling of filter-presses is avoided. I then compound the wet and pulpy mass of white lead in a mixer with linseed-oil or other suitable drying-oil until the oil and white lead
70 have formed into a mass, leaving the remaining mother-liquor clear. This is then run off and returned to the manufacturing process already referred to. A suitable proportion of oil to pulp would be from ten to twenty per
75 cent. of linseed-oil calculated upon the percentage of dry white lead in the pulp. The mixture of white lead and oil still contains a small quantity of intermixed globules of mother-liquor, and this may now be washed
80 out with water. This washing is preferably effected by agitating the mixture with a little water in an agitator of any usual construction. I find that about fifty gallons of water added in successive small quantities to the
85 mixture while still being agitated in the mixer is sufficient to wash one ton of material, whereas in washing the same quantity of precipitate for the preparation of dry white lead from one thousand to fifteen hundred gallons
90 are required. The mixed white lead and oil may now be treated by any convenient means for the removal of any water remaining intermixed with the white lead and oil after the washing operation—such, for instance, as by
95 warming in a vacuum-pan with constant stirring until the water is driven off, when the white lead will be ready to be ground and packed.

By my process, which may be applied with- 100

out previous washing with water, I treat the mass in a press or centrifugal machine to express the remaining mother-liquor or water.

When a press is used, the mixture is placed
5 in bags or infolded in cloths, the material in either case being a cloth of very close texture. The operation is similar to that in oil-pressing, the liquid being squeezed out of the mass and escaping through the cloth.

10 In using the centrifugal machine the mixture is placed in the cage of the machine, and the mixed white lead and oil being of much greater specific gravity than the liquid still remaining intermixed is thrown with greater
15 force against the periphery of the cage, thus pressing the liquid out of it and causing the same to accumulate on the inner surface of the mass nearer the center. When the operation is judged to be complete, the machine is
20 stopped and the liquid drawn off, leaving the mixed white lead and oil ready for grinding. In carrying out this operation with the centrifugal machine I prefer to make it continuous by supplying the mixed white lead and
25 oil continuously and preferably to deliver the same into the center of the cage near the bottom, removing the separated mass by an aperture in the outer periphery and the water from a point nearer the center.

30 It should be noted that when wet white lead is mixed with oil more oil is required to separate it from the water or mother-liquor than would be necessary to mix the same quantity of white lead if dry, and that consequently the finished product after grinding
35 is too soft to suit the usual requirements of buyers. In carrying out my process, however, I use a considerably larger amount of oil than is absolutely necessary in making
40 the mixture, by which means the time in mixing is very much shortened and at the same time the separation of water from the white-lead particles is more thorough. This excess of oil is afterward expressed, either in the
45 press or in the centrifugal machine, along with the remaining intermixed water, by which means I can produce a mixture of white lead and oil which after grinding may be as stiff as desired. The oil expressed is
50 added to the next batch in the mixer. This process may also be applied to mixing other wet pigments in oil, providing that the solution with which they are wet has no effect upon the oil.

55 By means of this improved method of handling white lead several operations are avoided, and there is produced white lead of any re-

quired consistency ready ground in oil at less cost than ordinary dry white lead, and, furthermore, injury to operatives is obviated. 60

What I claim is—

1. Improvement in the direct treatment of white-lead pulp precipitated from a basic acetate solution without intermediate washing, consisting, first, in partially removing the
65 mother-liquor; secondly, in separating the remaining mother-liquor by adding considerable excess of oil; thirdly, in expelling the excess of oil and the separated mother-liquor by pressure in the cold, and, fourthly, reducing
70 the proportion of oil in the final product to the required limit.

2. The herein-described process of preparing white lead, which consists in partially separating the mother-liquor from the white
75 lead, after the precipitation of the latter, and then without intermediate washing, mixing oil with the mixture of lead pulp and mother-liquor remaining, and finally removing liquid, other than oil, from the mass, together
80 with excess of oil, if any, by applying pressure to the mass.

3. The herein-described process of preparing white lead, which consists in partially separating the mother-liquor from the white
85 lead, after the precipitation of the latter, then, without intermediate washing, mixing oil with the mixture of lead pulp and mother-liquor remaining, then washing such mixture to remove mother-liquor, and finally removing
90 free liquid, other than oil, from the mass, together with excess of oil, if any, by applying pressure to the mass.

4. The herein-described process of separating mother-liquor from a mixture of mother-
95 liquor and white-lead pulp, which consists in mixing oil with the mass, and finally removing liquid, other than oil, from the mass, together with excess of oil, if any, by applying
100 pressure.

5. The herein-described process of separating mother-liquor from a mixture of mother-
liquor and white-lead pulp, which consists in mixing oil with the mass, washing such mixture to remove mother-liquor, and finally removing
105 free liquid, other than oil, from the mass, together with excess of oil, if any, by applying pressure to the mass.

In witness whereof I have hereunto set my hand in presence of two witnesses.

T. CRISP SANDERSON.

Witnesses:

HERBERT SEFTON-JONES,
GEORGE WILLIAM ROSE.