(12) **United States Patent**
Holland

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(54) **LEAD, WHITE**

(76) Inventor: **Homer Holland**

Homer Holland.

Letters Patent.

The schedule referred to in these Letters Patent and making part of the same, containing a description in the words of the said Homer Holland, himself of his improvement in the process of bleaching white lead and making carbonate of lead.

To all to whom these presents shall come: Be it known that I, Homer Holland of the Town of Westfield, County of Hampden and State of Massachusetts, have invented a new and useful improvement in the process for bleaching adulterated lead & for making & producing carbonate of lead or the pigment commonly known by the name of white lead, which improvement has not heretofore been known or used & that the following is a full and exact description of said improvement sufficient to distinguish the same from all things before known & made use of; reference being had to the accompanying drawings & to the letters of reference marked thereon, which form a part of this specification.

The nature of my said improvement in the method of applying the conjoint motion of agitation, air and water to metallic lead by placing fragments of this metal in revolving lead cylinders or chambers; so as to produce a finite powder or pulverized subdivision of lead, for making or producing the compound called white lead or carbonate of lead.

The combining carbonic acid from the atmosphere, directly with this subdivided, as it is formed in the cylinders by the addition of carbonate of soda or other alkaline matters so as to produce or make the carbonate of lead or the pigment known as white lead. The effect of the agitation

of the lead, shot or other fragments of metallic lead, into a tube cylinder or chamber, about four feet in length and three feet in diameter, made to revolve, horizontally upon an axis of plunges. The tube cylinder or chambers is enclosed in a strong and light wooden case. Air is admitted by perforations of the cylinder at its ends, near the axis. Soft water is put in the chamber, sufficient to cover the charge of shot or fragments. The cylinder is made to revolve eighteen or twenty times in a minute, by the application of any force. The electro-chemical action of the friction air and water produces a fine pulpy suboxide of lead which is cleaned out by removing a bung from the side of the cylinder, allowing thereon a hollow tube, leading to a sluice or channel, resting in a trough or trough, which conducts to a reservoir.

This pulpy suboxide sufficiently freed from water, is now readily combined with acetic acid, and giving "sugar of lead" and with nitric acid producing nitrate of lead.

To make carbonate of lead the process is identical with the above described for the suboxide; - with the additions about six or eight ounces of the carbonate of soda to each gallon of water used in the cylinder. The cylinder is revolved several hours in producing the suboxide for the salts of lead and from twelve to sixteen, previous to obtaining the carbonate or white lead; which is conducted as above described to a vessel, mixed with agitators or washed by decantation with pure water, once or twice, to free it from alkali. when it is to be dried by any convenient means, becoming the pure carbonate or "white" white lead of commerce. In this process for white lead, the use of nitrous or acetic or acetous acid in any shape, is avoided & the health of the manufacturers is preserved from the fumes of the volatile hydrates of lead so deadly in the ordinary process. The foregoing process of shape; but the revolving chambers may be cylindrical, square or polygonal, of any size & length. The shape of the lining

lining of the wooden cylinders may be of sheet lead or cast lead
cylinders to fit the wooden case or carboys & may be removed from
time to time as they foul away. The number of cylinders that might
work the charge, will depend on the larger employment and the extent
of the manufacture — each cylinder (principally the lead chambers)
may weigh, six hundred pounds — The charge added from time to time
is one hundred & fifty pounds of fragments of the scrapings of water pipe
carbonate of soda — The lead fragments may be sheets of sheet lead,
shot or fragments, produced by running melted lead through a colander
into water. Antimony and other alloys of metals are often mix-
ed with lead in the shot of commerce & must first be removed
The alkali employed is soda, as this has the strongest affinity for
chlorine, for oxygen & carbonic acid & is dispensable to form an
insoluble — The sulphy suboxide may also be conveniently carbonated
in the vessels employed for its production, with its connexion with the
exciter; by passing into the sulphy suboxide, as with the same, from
carbonates, carbonic acid produced by combustion of charcoal,
from fermentation or from the decomposition of carbonate of
lime or chalk, by sulphuric or hydrochloric acid. The decomposing
vessels, again may be used conveniently in removing a disa-
greeable yellowness of pure carbonated lead, by minutely in-
mingling of a little of indigo or Blue smalts with the carbonate
of lead. I claim as my invention & improvement
1st The application of the revolving cylinder or chambers as
above described, to the settling, communication, amalgamation
or commuting of metallic lead into the fine sulphy subsoxide
lead, for the sake, oxidate & nitrate of lead — or carbonate of lead
2nd The carbonating of the above described sulphuric oxide
formed in the cylinder by the addition of an alkaline carbonate
or by passing into this sulphy subsoxide, carbonic acid, giving imme-
diately white lead. —

Witnesses
Wm Hooker Jr
Charles Wordsworth

Homer Holland

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