

G. T. LEWIS & E. O. BARTLETT.
 Process of Making Lead Pigment.

No. 206,680.

Patented Aug. 6, 1878.

Fig. 1

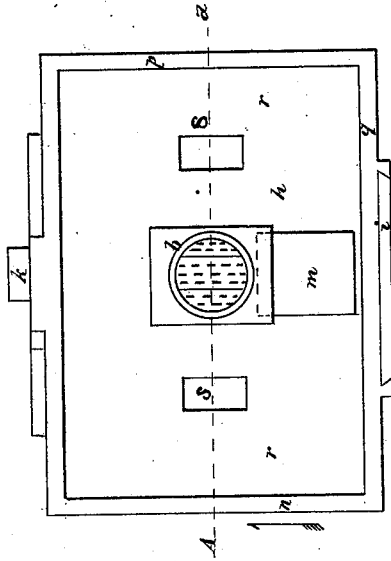


Fig. 2

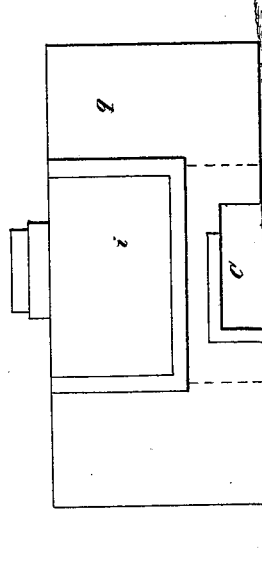


Fig. 3

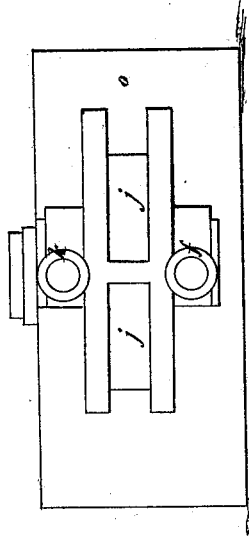
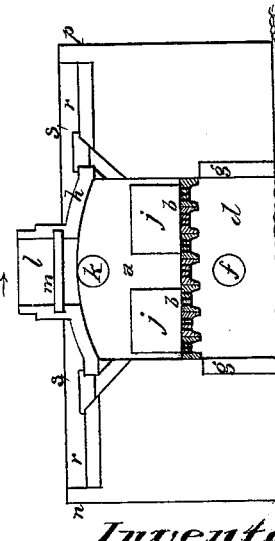


Fig. 4



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UNITED STATES PATENT OFFICE.

GEORGE T. LEWIS, OF PHILADELPHIA, PENNSYLVANIA, AND EAYRE O. BARTLETT, OF JOPLIN, MISSOURI.

IMPROVEMENT IN PROCESSES OF MAKING LEAD PIGMENT.

Specification forming part of Letters Patent No. 206,680, dated August 6, 1878; application filed January 2, 1878.

To all whom it may concern:

Be it known that we, GEORGE T. LEWIS, of Philadelphia, Pennsylvania, and EAYRE O. BARTLETT, of Joplin, in the State of Missouri, have invented a new and useful Improvement in the Manufacture of Dry White Lead and White-Lead Pigment from galena, (native sulphuret of lead;) and we do hereby declare that the following is a full and exact description of the same.

Heretofore the manufacture of dry white lead from galena or the native sulphurets has been effected by roasting or desulphurizing the galena, and then mixing the residue, after roasting, with carbon and subjecting the mixture to the action of heat in a compound reducing and oxidizing furnace and collecting the resulting fumes in bags, as described in Letters Patent of the United States dated March 1, 1870, No 100,353, granted to Eayre O. Bartlett for improvement in the manufacture of dry white lead. Pulverized galena has also been showered into a bed of fuel and the products collected in bags.

We have discovered that by mixing the native sulphuret of lead (galena) in a crushed state with carbon and treating the mixture in a reducing and oxidizing furnace without previously desulphurizing the ore a superior quality of dry white lead is produced. The products given off from the sulphuret of lead during this treatment chemically combine with the other fumes and improve the body and color of the product.

The furnace which we have found to work well for the purposes above mentioned is commonly known as the "Wetherill zinc-furnace," for which Letters Patent of the United States were granted to Samuel Wetherill, November 13, 1855, No. 13,806, and which is represented in the annexed drawings, in which—

a is the main chamber, the bottom *b* of which is composed of iron bars, perforated with small holes of about one-quarter of an inch in diameter and about one inch apart, and, preferably, made slightly conical, with the larger diameter downward. The size of the holes would be such as to prevent the crushed ore and coal from falling through. These perfo-

rated bars are suitably sustained at the ends on the front and back walls *c d*.

The ash-pit, below the perforated bottom, is of equal area therewith, and is provided with a door, *e*, in front, and with a hole, *f*, at the back for the reception of a pipe from suitable blowing apparatus.

The walls *g g* and arch on top should be built of some refractory substance, such as fire-brick.

The front is entirely open, and provided with sliding doors *i*, by which it can be closed when working the process or open to remove the residuum.

At the back there are two sliding jambs, *j j*, to give access to the main chamber for stirring the charge and for inspection.

At the back, near the arch, there is a hole, *k*, governed by a sliding damper, leading to a chimney for carrying off smoke and impure gases in the beginning of the operation on a new charge.

In the center of the roof there is an aperture, *l*, governed by a damper or sliding door, *m*, leading to a suitable apparatus for the collection of the oxidized vapors of lead.

The exterior walls, *n o p q*, may be built above the top to form two feeding-troughs, *r r*, one on each side of the arch or roof, and provided each with an aperture or passage, *s*, leading to the inside or main chamber, and each aperture or passage is provided with a cover to be put on after the furnace has been charged.

We mix together crushed ore (native sulphuret of lead) and carbon, preferably in the state of pea or dust anthracite coal, in the proportion of half and half, and treat the mixture in a compound reducing and oxidizing furnace.

Dense white vapors or fumes pass off, which are conveyed to a separate chamber, where they are strained by passing through a screen or series of screens of muslin or other textile fabric. Lime may also be employed in the furnace in the proportion of two hundred pounds of lime to four hundred pounds of galena, although the addition of the lime is not necessary in all cases.

We have discovered also that the process

of sublimation can be carried on with good results either in a furnace with grate-bars, with blast introduced at pleasure from below or at the sides, or in a furnace with a solid bottom, with blast introduced at the sides. The grate or furnace can be either closed or open at the top. We find, however, that the solid bottom presents some advantages, as it does not, like the grate-bottom, become filled and choked with molten lead.

We have also discovered that generated gas can be used in place of coal to accomplish the same end.

Having thus described our invention, what we claim is—

The process of manufacturing a basis of a

pigment by treating unroasted galena (native sulphuret of lead) mixed with carbon, by subjecting the same to the action of heat and oxygen in a compound reducing and oxidizing furnace or other furnace capable of oxidizing the sulphuret of lead and collecting the fumes, as above described.

GEORGE T. LEWIS.
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