H. M. GABEL.

PROCESS FOR MAKING LITHARGE AND RED LEAD.

APPLICATION FILED DEC. 6, 1919.

1,382,282. Patented June 21, 1921.

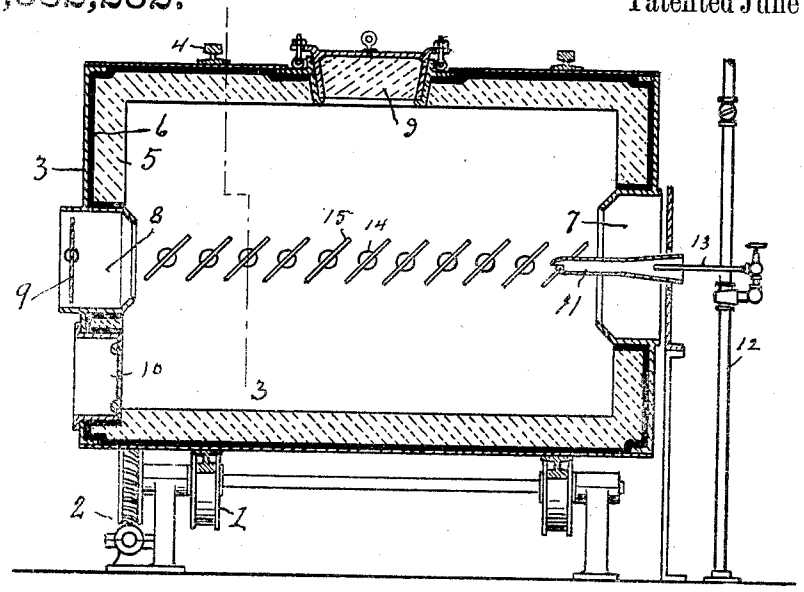


Fig. 1.

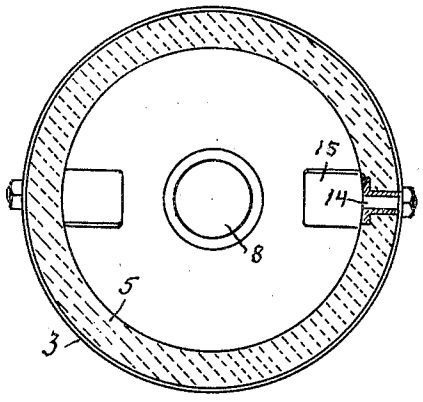


Fig. 3.

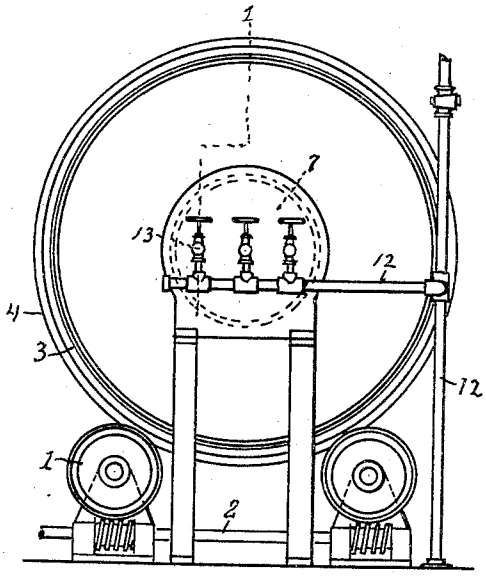


Fig. 2.

Witness:—
Helen Field.

Henry M. Gabel
Inventor

by James M. See
attorney

UNITED STATES PATENT OFFICE.

HENRY M. GABEL, OF CINCINNATI, OHIO.

PROCESS FOR MAKING LITHARGE AND RED LEAD.

1,382,282. Specification of Letters Patent. Patented June 21, 1921.

Application filed December 6, 1919. Serial No. 343,067.

To all whom it may concern:

Be it known that I, HENRY M. GABEL, a citizen of the United States, residing in Cincinnati, Hamilton county, Ohio, have invented certain new and useful Improvements in Processes for Making Litharge and Red Lead.

This invention pertains to an improved process and apparatus for making litharge and red lead, and the invention will be readily understood from the following description taken in connection with the accompanying drawing in which:—

Figure 1 is a vertical longitudinal section of a furnace embodying the apparatus part of my present invention, the section being taken in the plane of line 1 of Fig. 2:

Fig. 2 an end view of the furnace, the right hand end of Fig. 1: and

Fig. 3 a transverse section of the furnace in the plane of line 3 of Fig. 1:

In the drawing:

1, indicates 4 flanged wheels on 2 parallel shafts mounted in low standards on the floor of the apartment in which the apparatus is to be operated:

2, gearing, of worm type, connecting the two shafts on which these wheels are mounted, this gearing to be operated continuously by power:

3, a cylindrical metallic furnace-shell:

4, a pair of hoops surrounding the furnace-shell and bearing on the peripheries of wheels 1:

5, a firebrick lining for the furnace-shell:

6, a layer of insulating material, as asbestos, disposed between the firebrick lining and the shell:

7, an axial inlet through one end wall of the furnace:

8, an axial outlet through the opposite end wall of the furnace, this outlet being provided with a damper:

9, a charging-door disposed in a peripheral opening in the furnace:

10, a discharging door which may be provided in one of the end walls of the furnace, this discharging door being at the extreme inner radius of the furnace:

11, a series of gas-burners, having a support exterior to one end of the furnace, these burners projecting through the inlet 7:

12, a gas supply-pipe;

13, gas-injection pipes leading from the gas supply-pipes into the burners 11, these pipes being considerably smaller than the bore of the burners:

14, a horizontal series of journals in the wall of the furnace, each journal being angularly adjustable, there being 2 series of these journals, one on each side of the furnace: and

15, a blade on the inner end of each journal.

The blades 15 are to be adjusted at an angle, so that the series of blades at one side of the furnace will slope toward one end of the furnace while the blades of the series at the opposite side of the furnace slope toward the opposite end of the furnace. The furnace is to be charged with such quantity of granular metallic lead that a mass several inches in depth will be formed extending along the entire floor of the furnace. The gas burners are now to be ignited, the understanding being that oil instead of gas may be employed, the result being that the burners supply heat to the interior of the furnace, the pipes 13, in connection with the burners, acting as air injectors and serving to pass a volume of air through the furnace, the air being heated by the burners.

The furnace is now to be started into rotation, with the result that the blades pick up the lead and elevate it and discharge it toward one end of the furnace, the two series of blades operating in alternation on the mass so that the mass is given a shifting motion first toward one end and then toward the other end of the furnace, the mass, as it showers from the blades, and as it shifts in the furnace, becoming subjected to the oxidizing action of the heated air. The furnace is to rotate at the rate of about one turn in each five minutes, and, in the early stages of the process the heat in the furnace is to be maintained at about 600 degrees Fahr., or below the melting point of lead.

The process of oxidizing the lead is to be continued for from seven to ten hours. The temperature of the furnace may be raised after the first few hours. The result of the process is the formation of litharge or, expressed chemically

$$2Pb+O_2=2PbO$$

The litharge is in powdered form, very much finer, by reason of the tumbling ac-

tion of the mass in the furnace, than the granular lead with which the furnace was charged.

If this litharge product be not utilized as litharge, it may be subjected to further action in the furnace for a period of say ten hours, the result being red lead, or expressing this part of the process chemically,

$$6PbO+O_2=2Pb_3O_4$$

I claim:—

The process of making litharge which comprises comminuting metallic lead and repeatedly and successively bringing the comminuted lead into contact with an oxidizing gas and subjecting it to an abrasive action, the said oxidizing gas being heated during succeeding intervals of time to temperatures for first drossing said lead and then converting the drossed lead into litharge.

HENRY M. GABEL.

Witnesses:
L. F. RATTERMAN,
PHILOMENA FELDMAN.