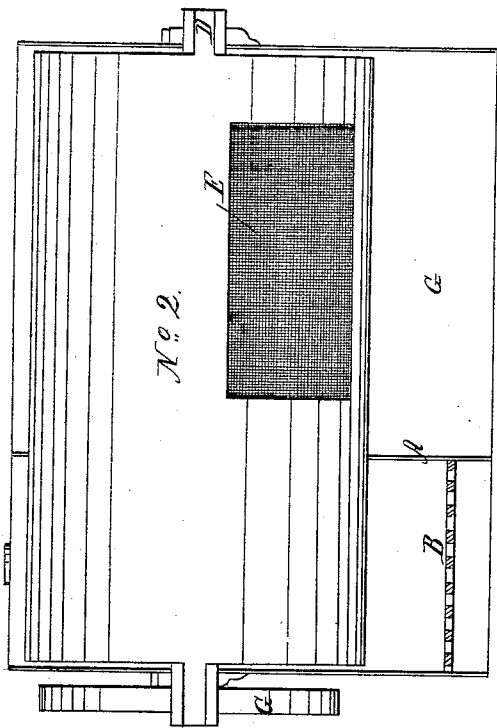


*A. B. Paul.*

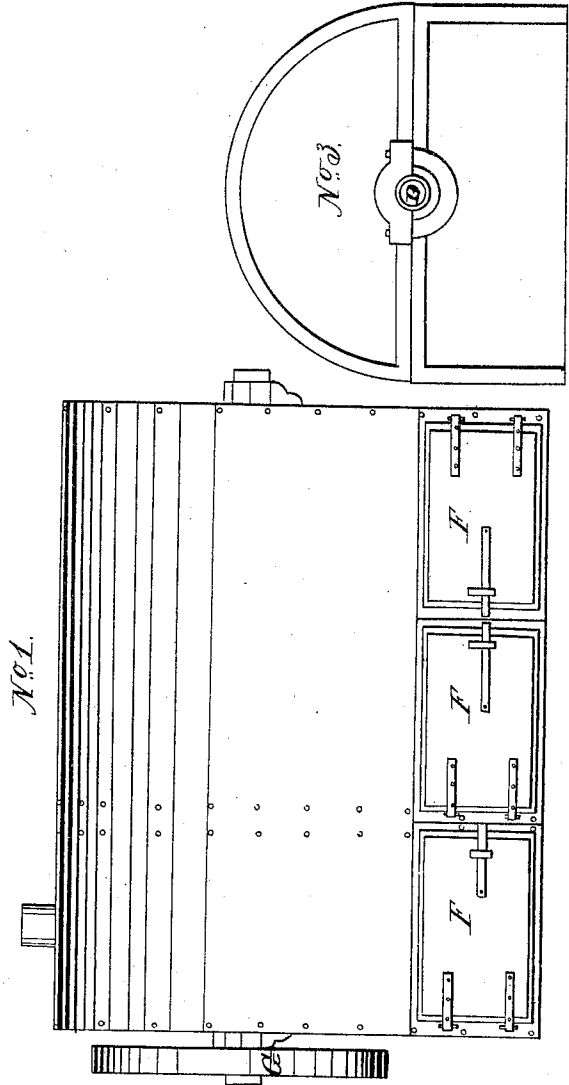
*Roasting Ores.*

*N<sup>o</sup> 10,500.*

*Patented Apr. 5, 1870.*



*Witnesses;  
John Skullen  
Kate M. Atkinson*



*Inventor;  
Almarin B. Paul*

# United States Patent Office.

ALMARIN B. PAUL, OF SAN FRANCISCO, CALIFORNIA.

Letters Patent No. 101,500, dated April 5, 1870.

## IMPROVED APPARATUS FOR DISINTEGRATING ORES.

The Schedule referred to in these Letters Patent and making part of the same

*To whom these presents shall come:*

Be it known that I, ALMARIN B. PAUL, of the city and county of San Francisco, California, have invented a new and useful System of Pulverizing and Preparing Ores for Amalgamation; and the following description, taken together with the drawings, the figures and letters attached, will enable any one skilled in the art to make and use the same.

The purpose of my invention is to make a pulverizer in such a manner as to be heated, and at the same time so constructed, in respect to smoke, as not to be detrimental to the ore during pulverization or discharging of same from, when pulverized.

The main object, however, is to facilitate pulverization by drying, as well as the calcination and combustion of metallic ores, by the means of artificial heat during the time of pulverization, and for the better ventilating and amalgamating of the metals of same after being discharged.

I take an iron cylinder of any given size, either as to diameter or length, (the best proportion being, however, one-third longer than its diameter,) which is made to revolve on hollow axles or trunnions.

This cylinder is inclosed in an iron casing, the end of which should be made of cast-iron, and sufficiently strong to support the barrels, with bearings for trunnions cast thereon.

The circle and sides can be made of sheet-iron, of sufficient strength to not warp by heating. The interior of the casing is partitioned off, one-third or one-quarter space being taken for the fire-place, the remainder to be the dust-chamber and apartment for receiving discharged ore.

The partition is so constructed as to encircle the cylinder, and as close as the revolving barrel will allow.

Doors for the fire-place, or discharged ore apart-

ment, can be constructed to suit, either on ends or sides.

The operation is thus:

A given quantity of iron balls or buttons, heavier pieces of quartz, or hard stone, are introduced as pulverizers. The ore in a finer size, and suitable for pulverization, is then introduced into the cylinder through the hollow trunnions or side opening, as desired, and in quantities proportional to size of cylinder, but never to exceed one-half the capacity of cylinder as a circle.

The whole mass is then set to revolving by suitable gearing, and heated by the fire to a fair drying and ventilating heat, and to gain what I term an electrical condition of the ore, but not what may be termed a desulphurizing degree.

No. 1 is a side view of cylinder and casing.

No. 2 is a sectional view of cylinder and casing.

No. 3 is an end view, showing trunnions.

A is partition.

B, fire-place.

C, ore-chamber.

D are hollow trunnions.

E, sieve for discharging ore.

F, doors.

G, pulley.

What I claim is—

1. The drying, ventilating, and heating of ores during the process of pulverization, by the means of artificial heat.

2. The combination of furnace and discharge apartments, for the purposes as specified.

3. The heating of ores for the facilitating pulverization and more perfect amalgamation by the dry amalgamating process.

Witnesses:

ALMARIN B. PAUL.

JOHN MULLEN,

KATE M. ATKINSON.