

# UNITED STATES PATENT OFFICE.

ALMARIN B. PAUL, OF SAN FRANCISCO, CALIFORNIA.

## IMPROVEMENT IN PREPARING ORES FOR AMALGAMATION.

Specification forming part of Letters Patent No. 133,172, dated November 19, 1872.

*To all whom it may concern:*

Be it known that I, ALMARIN B. PAUL, of San Francisco, San Francisco county, State of California, have invented Improvements in the Dry-Working of Ores; and I do hereby declare the following description and accompanying drawing are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvements without further invention or experiment.

My invention relates to an improved method of preparing metalliferous ores during the process of crushing and pulverization, whereby the subsequent amalgamation is greatly favored, and a large per cent. of metal which is usually lost is retained. The metals are also prevented from absorbing any of the base metals, such as lead, copper, antimony, or zinc, during the separating process. My method I employ only in the dry-working of the ore.

To accomplish the objects above mentioned I add to the dry ore, either previous to crushing or during the process of crushing, potassa or soda in a pure condition, or the caustic of either, caustic potash being preferable; the chemical effect, as practically demonstrated, being such as to soften the ore by neutralization of acids, when present, and to protect the mercury from the sickening properties of copper, lead, zinc, antimony, or iron, either in the form of a sulphuret, oxide, or carbonate, and thereby enable a larger percentage of the precious metals to be amalgamated and taken up in a clean and pure condition.

The manipulation is as follows: During the

process of dry pulverization of ores I introduce for every ton of ore to be crushed from one to two pounds (more or less, according to the rebellious nature of the ore to be treated) of caustic potash or soda, or an equivalent of them, in which potassa or soda will represent full fifty per cent. of the whole. The mercury being thus protected from the "fouling" or "sickening" properties of the ore, when delivered into settlers for the precipitation and collection of mercury, will combine with greater activity and certainty, and in consequence there will be a greater saving of mercury as well as the precious metals.

I do not make the mixture with the view of operating upon the combination by the use of oxidizing or desulphurizing leats in combination with furnaces or ovens.

I do not claim it to be used with any high degree of heat with the view of the disintegration of ores by any sudden change of temperature; but

What I do claim is—

The process of preparing metalliferous ores for amalgamation in a dry condition, the same being accomplished by the addition of potassa or soda, or their equivalent, while the ore is being pulverized and while it is at an ordinary temperature.

In witness whereof I hereunto set my hand and seal.

ALMARIN B. PAUL. [L. S.]

Witnesses:

J. L. BOONE,  
C. M. RICHARDSON.