

UNITED STATES PATENT OFFICE.

JOHN FELT OSGOOD, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN DESULPHURIZING ORES.

Specification forming part of Letters Patent No. **101,654**, dated April 5, 1870.

To all whom it may concern:

Be it known that I, JOHN FELT OSGOOD, of Boston, Massachusetts, have invented certain Improvements in the Method and Process of Desulphurating Sulphuret Ores; and I do hereby declare that the following is a full, clear, and exact description thereof.

I claim to have invented the application of nitrous and oxygen gases to sulphuret ores while in process of roasting in a suitable oven or furnace; also, the mixing of pulverized albite, labradorite, or other feldspathic mineral with the ore while in process of roasting, to aid in expelling the sulphur. I find a long muffle-furnace convenient for my purpose. By a "muffle-furnace" I mean a furnace in which the fuel and products of its combustion do not come in contact with the ores or other article under treatment. As a convenient method, I supply the gases from small furnaces or plain retorts at the end or side of the large furnace by gas-tubes leading to different parts of the oven or large furnace, controlling the gases by stop-cocks, as desired. To generate the gases, I adopt as a convenient method the following: I put into pots in the small furnace, or into the retorts, sulphuric acid and nitrate of soda, or their equivalents. The gases generated from these by application of heat pass through the tubes and are discharged upon the roasting ore in the chamber or oven at various points, as may be found necessary.

Instead of applying the gases in the manner above described, pots or pans containing the same substances may be placed inside the chamber or oven at or near its mouth, and the gases generated therefrom will be diffused through the chamber, and will thus act upon the roasting ore.

Furnaces of a different form may be used, and the gases may, through tubes or otherwise, be discharged upon the roasting ores when falling through a heated vertical furnace.

The mixing of albite, labradorite, or other feldspathic mineral with the ground ore while roasting may be accomplished in various ways. If a long muffle-furnace be used, the pulverized ore may be supplied at the end of the chamber or oven most distant from the fire, and fed along toward the fire end either by machinery or by hand, and the pulverized albite or other feldspathic mineral is added, through doors for the purpose in the chamber, in proper charges, and combines, as I suppose, with the sulphur of the ore, and, as I know, materially aids in the process of desulphuration.

I find by experiment that either fluorspar or the natural mineral called "magnesite," used instead of the minerals named, in the same way, practically serves as a substitute for them.

Should the ore not be thoroughly desulphurated by the first operation, it may be passed rapidly through the same process a second time. I find, too, that chemical action is aided by steam from a jet, generated by means of steam-coil placed over or in the furnace-fire or within the chamber, and thrown into the chamber or oven upon the roasting ores.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The application of nitrous and oxygen gases to sulphuret ores while in process of roasting in a suitable oven or furnace, in the manner and for the purposes described.
2. The mixing of pulverized albite, labradorite, or other feldspathic mineral, or its equivalent, with sulphuret ores while in process of roasting; to aid in desulphurating them, in the manner and for the purposes described.

JOHN FELT OSGOOD.

Witnesses:

HENRY F. FRENCH,
JOHN H. LOCKEY.