

# UNITED STATES PATENT OFFICE.

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## PROCESS OF OBTAINING THE PRECIOUS METALS FROM SPEISS.

SPECIFICATION forming part of Letters Patent No. 384,682, dated June 19, 1888.

Application filed November 16, 1887. Serial No. 255,330. (No specimens.)

*To all whom it may concern:*

Be it known that I, LEWIS WILLIAM DAVIES, a citizen of the United States, residing at Eureka, in the county of Eureka and State of Nevada, have invented certain new and useful Improvements in the Process of Obtaining the Precious Metals from Speiss; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

The invention relates to the speiss which accumulates at works where base ore is smelted, and contains about forty per cent. of arsenic and sixty per cent. of iron. There is usually about twelve dollars to the ton of gold and the same of silver. Hitherto no process has been found to eliminate a sufficient percentage of the precious metals to pay the cost. After treating some ten thousand tons and obtaining about eighty-six per cent. of the precious metals, I find that my process is valuable and deserves to be protected by Letters Patent. At the works of the Eureka Consolidated Mining Company this speiss has been accumulating for the past fifteen years, and has hitherto been regarded as worthless.

My process is as follows: The speiss is melted in the ordinary ore-smelting furnace; then drawn off through a trough lined with fire-clay, and conducted into a wrought-iron receiver lined with fire-brick. In order to thoroughly mix the two molten substances—lead and speiss—in the receiver, I subject them for about one minute to an air-pressure of about eighteen pounds to the square inch. I now pour into the receiver twenty-five per cent. of the weight of speiss of red-hot molten lead. The intermixed air causes the molten mass of lead and speiss to be in a continuous state of

ebullition, so that the particles of lead are brought into contact with nearly all the particles of gold and silver. By means of the air-blast the arsenic is burned and much heat given out, so as to augment the heat in the receiver. The molten mass of speiss and lead is now poured into a suitable pot, which is set aside to allow the lead, gold, and silver to be precipitated to the bottom, from whence they are drawn through a bottom hole. The gold and silver may then be separated from the lead in any of the well-known ways.

I am aware that Patent No. 336,792 describes forcing air through molten speiss and injecting litharge or granulated lead; but in practice the molten mass has been found only to produce a maximum of sixty-seven per cent. of the contained precious metals; hence I concluded that the molten mass was chilled by the lead, and in order to avoid this made my molten lead red-hot before it was poured into the molten speiss. This greatly lessens its affinity for the arsenic, and also lessens the calcination it otherwise would require preparatory to its desilverization.

Having thus described all that is necessary to a full understanding of my invention, what I claim as new, and desire to protect by Letters Patent, is—

The method of separating precious metals from speiss, which consists in melting the speiss, then injecting molten lead into the molten speiss, then thoroughly mixing them together, and, finally, allowing the mixture to stand until the lead and precious metals have been precipitated and are ready for removal, as described.

In testimony whereof I affix my signature in presence of two witnesses.

LEWIS WILLIAM DAVIES.

Witnesses:

J. L. WINES,  
A. E. KAYE.