

UNITED STATES PATENT OFFICE.

LEWIS GORDON PAUL, OF HUDDERSFIELD, ENGLAND.

PROCESS OF MAKING NITRITES.

SPECIFICATION forming part of Letters Patent No. 572,819, dated December 8, 1896.

Application filed July 24, 1896. Serial No. 600,336. (No specimens.)

To all whom it may concern:

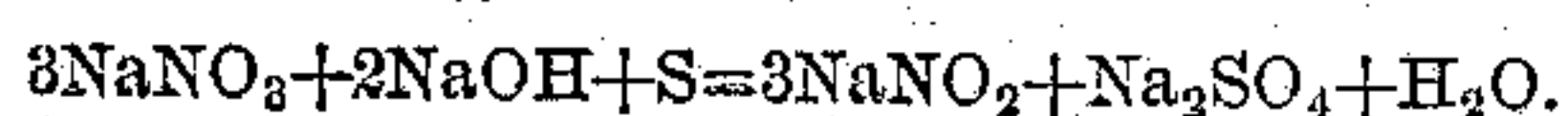
Be it known that I, LEWIS GORDON PAUL, a subject of the Queen of Great Britain, residing at Huddersfield, in the county of York, England, have invented certain new and useful Improvements in the Manufacture of Nitrite of Soda and Potash; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to the manufacture of nitrites of soda and potash from the nitrates of the same by the use of sulfur and caustic soda or potash.

The method of carrying this invention into effect is by heating the nitrates with the caustic alkali and adding sulfur gradually to the melted mass.

As an example of the production of nitrite of soda from nitrate of soda, I melt fifty kilos of commercial sodium nitrate in a cast-iron pan with about twelve kilos of solid caustic soda, (containing seventy per cent. Na_2O .) I then add very gradually three and one-half kilos of sulfur and stir vigorously all the time. The temperature is kept at such a degree that the sulfur does not deflagrate when added to the melt. As soon as the sulfur has been introduced I add another twelve kilos of caustic soda, and then add three and one-half kilos more of sulfur under the same conditions as before. The sulfur dissolves quickly and the nitrate becomes reduced to nitrite. When all the sulfur has been added, I raise the temperature until the melt becomes thinner and eventually almost clear.

The reaction of the sulfur upon the nitrate and the caustic alkali may be expressed by the following equation:



By withdrawing samples from time to time from the melt and applying the usual tests to show that the quantity of nitrite formed does not increase the end of the reaction is easily indicated. The purification of the nitrite and separation from the sulfate of soda produced at the same time can be effected by fractional crystallization. About chemically equivalent proportions of nitrate of potash and of caustic potash can be substituted for the nitrate of soda and caustic soda given in the above example. In this case the reaction will be as follows:



I am aware that sulfids have been suggested for the transformation of nitrates into nitrites, and that they will transform a certain proportion, but I have not been able to transform a beneficial quantity by their use, and I do not claim the making of nitrite from nitrate by the use of such sulfids when separately prepared and afterward used for the reduction of nitrate to nitrite.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The herein-described process for the production of an alkaline nitrite, which consists in melting an alkaline nitrate together with the caustic compound of the same alkali, and adding sulfur to the melt, substantially as specified.

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

LEWIS GORDON PAUL.

Witnesses:

CHAS. MILLS,

THOMAS H. BARRON.