UNITED STATES PATENT OFFICE.

JOHN GREENWOOD, JOHN MERCER, AND JOHN BARNES, OF LANCASTER COUNTY, ENGLAND.

IMPROVEMENT IN PREPARING STANNATE OF POTASSA AND SODA.

Specification forming part of Letters Patent No. **4,688**, dated August 12, 1848.

To all whom it may concern:

Be it known that we, JOHN GREENWOOD, JOHN MERCER, and JOHN BARNES, subjects of the Queen of Great Britain, have invented or discovered a new and useful invention of certain Improvements in the Manufacture of certain Chemical Agents used in the Dyeing and Printing of Cottons, Woolens, and other Fabrics; and we do hereby declare that the following is a full and exact description thereof.

The nature of our said invention and the manner in which the same is to be performed are fully described and ascertained in and by the following statement thereof—that is to say:

Our invention has for its object the manufacturing stannate and stannite of soda or potash in a dry crystalline or pasty state.

It is well known to dyers and printers that in making tin-preparing liquor, or stannate of soda, it has been heretofore usual to take at the rate of one gallon of what is known in the trade as "oxymuriate of tin," and adding thereto twelve, sixteen, twenty, or more gallons of dilute caustic soda, and this constitutes their tin-preparing liquor, or stannite of soda, or the stannate of potash when potash is used in place of soda.

Now, according to our invention the stannate is made into a dry state or in crystals, or in a pasty state, so as to pack in a small compass, and then the parties using it prepare therefrom the desired tin-preparing liquor by dissolving the same in water.

In order that our invention may be fully understood, we will proceed to describe the means pursued by us.

We take twenty-two pounds of caustic soda (one gallon weighing thirteen and a half pound) and put it in an iron crucible heated to a low red heat by a fire under it. When evaporation has taken place so as to produce, or nearly so, what is called "hydrate of soda"—that is, until watery vapors cease to be evolved—we then add eight pounds of nitrate of soda and four pounds of common salt, (chloride of sodium.) When the mixture is at or nearing the fluxing heat, we add ten pounds of feathered block-tin. We stir the materials together with an iron stirrer. The mass becomes dark colored and pasty and ammonia is given off, the tin decomposing both the water of the hydrated soda and part of the nitrate of soda. The stirring is continued as well as the heat under the crucible until ignition or deflagration takes place and it becomes red or white hot and of a pasty consistence. This product is stannate of soda. We then take it out of the crucible, and when cold we grind it into powder, and it is dry stannate of soda, suitable to be packed and sent out to the printer and dyer; but if it is desired to have it in a more pure state, we merely dissolve the dry stannate of soda in water and allow any impurity it may contain to settle. We take the clear liquor and evaporate down to crystallization in an iron boiler, and as the crystals form at the bottom of the pan, we take them out and dry them on hot iron plates, or we evaporate all down to a pasty state not quite dry, but so dry as not to let any fluid run from it. Should stannite be desired in place of stannate then we take four pounds of common salt, one gallon of caustic soda, weighing thirteen and half pounds, one pound of nitrate of soda, and four pounds of feathered block-tin. We put all these at once into a hot iron crucible over a fire and stir and boil to dryness, still stirring the dry powder so long as any ammonia is given off. We then consider the process finished. We now remove the contents from the crucible, and it is what we call "stannite of soda" in a dry state, differing from stannite inasmuch as the tin contains only half the quantity of oxygen.

In order to obtain tin-preparing liquor we take the stannate of soda and dissolve it in boiling water about three pounds to one gallon, and add three, four, or five gallons of cold water to it to form the strength required for the different styles of work, according to the discretion of the printers. This solution of stannate of soda is to be used for and in lieu of what is known in the arts of printing cottons and delaines as "tin-preparing liquor" or "stannate of soda liquor," and we apply the stannite in the same way and as is well understood.

If stannate or stannite of potash be desired then potash will be employed in place of soda,

and the chemist, from the directions above given for soda, will readily prepare the stannate or stannite of potash.

Having thus described the nature of our invention and the best means we are acquainted with for performing the same, we do not confine ourselves to the means above described, so long as the stannate or stannite of soda or of potash be produced in a dry state or in crystals, or in the state of paste, so as to pack in a small compass for ready and convenient transport; and we would wish it to be understood that what we claim is—

The manufacturing of stannate and stannite of soda and potash by fluxing nitrate of soda or potash and tin.

JOHN GREENWOOD.
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JOHN BARNES.

Witnesses:
EDW. HERFORD,
THOS. SAML. BROWNE.