

# UNITED STATES PATENT OFFICE.

N. A. F. BREWER, OF CAMDEN, SOUTH CAROLINA.

## IMPROVEMENT IN REFINING GOLD AND SILVER.

Specification forming part of Letters Patent No. 5,663, dated July 11, 1848.

*To all whom it may concern:*

Be it known that I, N. A. F. BREWER, of the town of Camden, in the district of Kershaw and State of South Carolina, have discovered an Improved Mode of Refining Gold and Silver, of which the following is a specification.

The nature of my discovery consists in keeping the surface of metal in ebullio-fusion in contact with a volume of oxygen.

Manipulation: To two parts muriate of soda add three parts nitrate potassa; reduce to fine powder, and intimately incorporate the two together, and put double the quantity, by weight, of the flux to the supposed base metal in the mass under treatment in a pot (Hessian crucible) large enough to prevent boiling over, and throw one or two pennyweights of lead to every ounce of metal under treatment every six or eight minutes until one-fourth more lead has been added than the supposed base metal. After the last portions of lead have been added the pot should remain in the fire seven or eight minutes for every ounce of metal that it contains, (but a little practice will enable the refiner to facilitate the process more than fifty per cent. over the time above mentioned, as I have refined a mass containing over two per cent. of base metal that boiling nitric acid would scarcely have a perceptible action on in less than fifty minutes by repeated melting with additional flux at each melting;) and that the muriate of soda may not be volatilized and the niter left without anything to prevent it from parting with its oxygen, the heat of the furnace should not exceed 40° or 50° Wedgewood, or twice that required to keep the metal properly fused, and

the less heat there is over and above that required to keep up an active fusion the better.

If there is not enough flux to carry off all the base metal, (which may be known by trial with charcoal, which the oxygen attacks with such avidity as to cause it to burn with greater brilliancy,) more should be added, as circumstances may require.

The proportions of the flux may be varied, but the niter should not exceed two-thirds, as over that proportion, and even that, will give out such an abundance of oxygen as to cause considerable waste. The less the niter is in proportion the higher the temperature at which the flux may be used until that point is reached at which the muriate of soda is volatilized.

Care should be taken that the crucible does not remain too long in the fire, as the litharge of the lead and the flux acts powerfully on the crucible, and one will not withstand the action of a hot fire for more than twenty-five or thirty minutes, and the larger the surface of the metal exposed to the action of the flux the better charcoal should be carefully kept out of the pot or crucible.

What I claim as my improvement, and would secure by Letters Patent, is—

The use of the compounded flux, as stated, in the manipulation, whereby the niter is prevented from so readily parting with its oxygen, consequently greatly diminishing expense in refining, in connection with the application of lead, thereby obviating the necessity of stirring or agitation.

N. A. F. BREWER.

Witnesses:

A. TYE,  
SAML. A. ROPER.