United States Patent Office.

JOSIAH S. PHILLIPS, OF SAN FRANCISCO, CALIFORNIA.

Letters Patent No. 114,848, dated May 16, 1871.

IMPROVEMENT IN AMALGAMATING THE PRECIOUS METALS AND PREVENTING THE LOSS OF MERCURY.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOSIAH S. PHILLIPS, of the city and county of San Francisco, State of California, have invented certain Improvements in the Treatment of Quicksilver for the purpose of Amalgamation; and I do hereby declare the following description and accompanying drawing are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvements without further invention or experiment.

My invention relates to an improved process for preparing mercury for use in amalgamating the precious metals, both for the purpose of preventing loss of the quicksilver and for stripping the particles of metal which are being amalgamated of the sulphurous coat or envelope in which they are frequently incased, so that the mercury can act upon them.

It is also intended for the better covering of copper plates with mercury.

In order to prepare the mercury for amalgamation it is placed in a glass, iron, or other vessel, together with a quantity of diluted sulphuric or hydrochloric acid and small chips of zinc added. The bottle is then shaken and hydrogen gas is formed, which, mingling with the mercury, thoroughly cleanses it.

Small strips of copper are then added to the cleansed mercury, or removable strips of copper may be attached to the fronts of grinding-shoes in the amalgamating-pan, so as to give a nucleus for the attraction, which is caused by the attraction of amalgamation and cohesion during the amalgamating process.

The mercury, being thus cleansed and sharpened in activity by the zinc and copper, is further benefited by the galvanic action which this combination will create in the iron pan or battery, as well as on amalgamated copper plates, thus preventing the loss of mercury, and consequently saving more gold.

In order to remove any sulphurous coating which may envelop the particles of gold, and thus prepare it to be acted on by the mercury, chloride of barium is added to the contents of the pan, either alone or with other chemicals.

The addition of this chemical also aids in the precipitation of the sulphur released by grinding metallic sulphide ores, and prevents the mercury from being decomposed or floured and wasted, while the released chlorine assists in dissolving gold and precipitating silver.

I do not claim the use of finely-divided copper for cleaning mercury, as described in the patent to W. R. Frink, dated August 30, 1864, nor the use of zinc, tin, or other metal in the same manner, as described in the patent to William Crookes, dated May 15, 1866.

Having thus described my invention,

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

1. The preparation of mercury in the manner above described, for the purpose of cleansing and increasing its affinity for the precious metals, and also to prevent loss of the mercury during amalgamation, substantially as above specified.

2. The addition to the mercury of chloride of barium, either separately or with other chemicals, during amalgamation, substantially as and for the purposes above described.

In witness whereof I have hereunto set my hand and seal.

JOSIAH S. PHILLIPS. [L. S.]

Witnesses:

JNO. L. BOONE,

GEO. N. STRONG.