UNITED STATES PATENT OFFICE.

JOHN FEIX, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN THE MANUFACTURE OF COPPER INGOTS FOR ALLOYING GOLD AND SILVER.

Specification forming part of Letters Patent No. **144,896**, dated November 25, 1873; application filed August 15, 1873.

To all whom it may concern:

Be it known that I, JOHN FEIX, of the city and county of San Francisco, State of California, have invented a Process for Making Copper Alloy for Gold and Silver Coin; and I do hereby declare the following description sufficient to enable any person skilled in the art or science to which it most nearly appertains to use my invention without further invention or experiment.

In the manufacture of gold and silver coin, it is necessary that the coin, after being minted, shall be of a certain fixed standard of fineness; otherwise, it must be remelted, worked over, and again manufactured into coin.

When ordinary commercial copper is used as an alloy for the precious metals, the oxides which it contains render the standards of the coin variable, so that many batches must be remelted and worked over after it has been once made into coin.

My improvement consists in removing the oxides from the copper before alloying it with the gold and silver, so that the proportions of the alloy being properly maintained, the standard of the resulting coin will be uniform and correct. My improvement further consists in an improved process of molding the copper in order to impart to it a bright cherry color, which will indicate its superior character, and also in providing ingots, for alloying gold and silver, which are superior to the ordinary commercial ingot.

In order to accomplish this, I take common commercial copper and fuse it in a covered black-lead crucible, in a common melting-furnace. When perfectly fused I open the furnace-door sufficiently to create a cold-air draft. I then uncover the crucible and apply small pieces of dry wood (size two by three inches and one inch in thickness) upon the surface of the fused metal, without agitating the metal, leaving sufficient uncovered space upon the surface of the melted metal to allow the flame of the burning wood to play upon and over the surface of the liquid metal. I renew the wood as soon as it is carbonized, and cease the application when the metal shows a clear surface without flitting, and small bubbles begin to show themselves around the edge of the crucible. I then cover up the crucible and give the metal more heat, and when hot enough to be taken out apply powdered charcoal in small quantities, which will prevent the dripping of the metal from the dipping-pot which is used in taking out the fluid metal from the crucible. I then cast the metal into previously-oiled, flat, open iron molds, and make thin bars, oblong in shape, with rounded corners. These bars should be about six inches long by two inches in width, and about three-eighths of an inch thick, more or less.

The bars should be immediately cooled in warm water of the temperature of 170° Fahrenheit.

In cooling off the bars, great care must be taken to empty the same out of the molds and immerse them into the water at the very moment the metal congeals. The result of this operation is shown by the color of the metal, which will be of a beautiful, clean, dark cherry-red luster.

Copper prepared in this manner and shape possesses a finer grain, and is more reliable as an alloy by reason of the total absence of oxide of copper, and the shape of the bars facilitates and expedites the melting, a larger surface of metal in proportion to the bulk being offered to the action of the heat. Before using the metal for alloy, the moisture should be dried out by fire heat, and it is better to keep it in a dry place, ready dried.

Heretofore, it has been usual to burn charcoal upon the surface of molten copper, which, in combination with a birchen stick for stirring the metal, was intended to remove the oxides; but my process requires no agitation. I simply employ the burning pieces of wood, which I remove as soon as they become charred.

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

1. The process herein described for removing oxides from metallic copper, consisting in melting the copper and treating it while at

rest with flame from wood, substantially as described.

2. The method of giving a bright red color to copper, consisting in treating it in a crucible, molding it into ingots, and cooling, substantially as described.

3. The new article of manufacture, of dark cherry-red ingots of copper, made substantially as and for the purpose set forth.

In witness whereof I hereunto set my hand.

JOHN FEIX.

Witnesses:

SAML. HERMANN,

ELLIS CLARK, Jr.