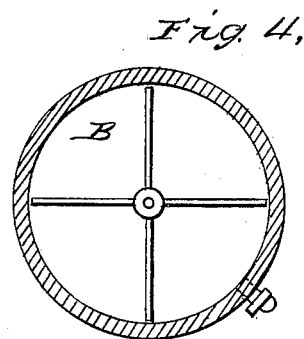
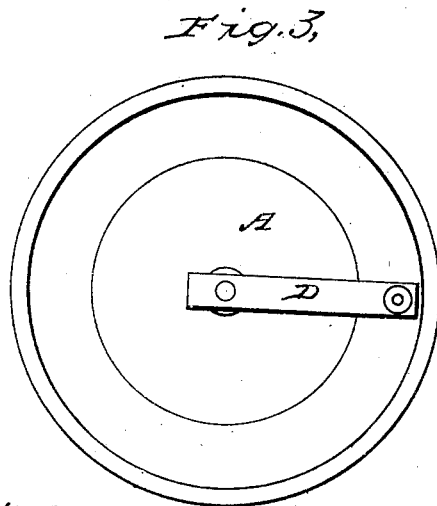
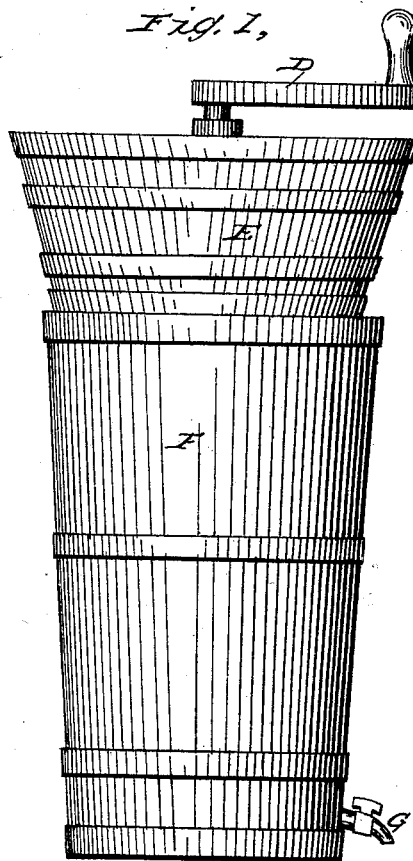
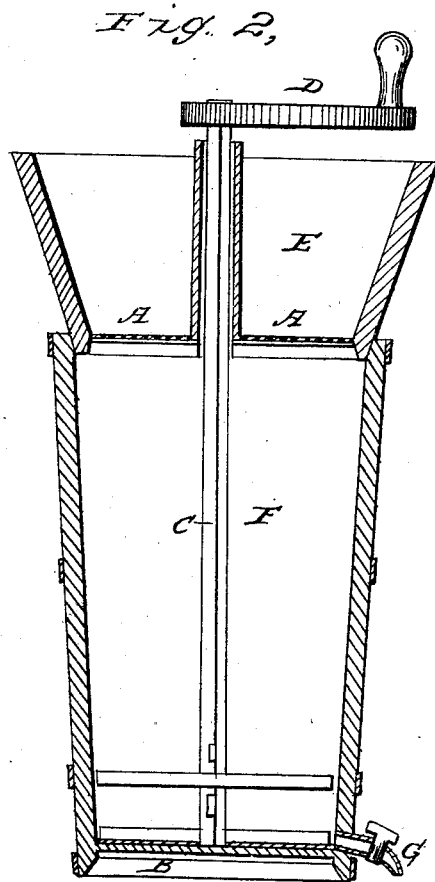


O. G. WARREN.
Ore Amalgamator.

No. 45,944.

Patented Jan 17, 1865.



WITNESSES:
J. D. Hartman
Valour Duw.

INVENTOR:
Oren G. Warren

UNITED STATES PATENT OFFICE.

OWEN G. WARREN, OF NEW YORK, N. Y.

IMPROVED APPARATUS FOR AMALGAMATING METALS.

Specification forming part of Letters Patent No. 45,944, dated January 17, 1865.

To all whom it may concern.

Be it known that I, OWEN G. WARREN, of the city, county, and State of New York, have invented a new and useful Improvement in the Amalgamating Process by which the Metals are Obtained in Grades of Fineness; and I hereby declare that the following is a full and exact description thereof.

This invention is called "Warren's Leach Amalgamator," or "The Leach Amalgamator."

Reference is had to the drawings hereunto annexed and making part of this specification.

Figure 1 is an elevation of a leach-tub with quicksilver-tub at top; Fig. 2, a vertical section; Fig. 3, a top view of the quicksilver-tub; Fig. 4, a transverse section of the leach-tub at bottom, showing the stirrer.

The same letters refer to the same things in all the designs.

A is the strainer; B, the filter, or bottom of the tub; C and D, the stirrer; E, the quicksilver-tub; F, the leach-tub; G, faucet.

This process consists in finely pulverizing ores, mixing them with water, and boiling and showering through the mixture quicksilver, to gather by amalgamation the metals contained, in the grades of their fineness.

For the hand process a common leach-tub would do. It may have a stirrer extending down to the bottom, to prevent the quartz settling and indurating. Another tub, to fit in the top of the leach-tub, must have a strainer at the bottom, to let the quicksilver poured into it pass down in a shower. The strainer may be of any porous wood, cut across the grain, a wire sieve, a cloth, or a buckskin. Thus a million of fine streams may pass down through the quartz, and even if in a dry state will gather the metals in its passage, but not as well as when the quartz is mixed in water.

The water would best be hot, but the work can be done with cold water.

For extensive works I would bear up the quicksilver by an elevator and be constantly delivering it at top and let it flow out at bottom, either through a strainer that would admit the passage of the quicksilver and not that of water, or occasionally draw off the quicksilver by a faucet when it accumulates.

To grade the metals procured, I shower the quicksilver through the ores and water—say gold-bearing quartz—and when it has run a few minutes set apart that quicksilver and take from it the amalgam, which will hold the metal of the highest grade in the ores—say platinum. Next I would shower the quicksilver through for several hours and set that apart for the gold it might contain, and so on, for inferior classes of metals.

Having thus fully described my invention so that it is comprehensible by all persons, and having affixed names to the processes and things produced, what I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. Pouring quicksilver down through a sieve or strainer into a mass of comminuted ores and water which has been subjected to the cooking process, to gather the ores contained, in the manner substantially as above described.

2. Obtaining the metals in their successive degrees of fineness by successive leaching with quicksilver poured down through a strainer into the ores and water, and successive gatherings of the amalgam formed, in the manner substantially as above described.

Witnesses: OWEN G. WARREN.

J. D. STURTEVANT,
VALORUS DREW.