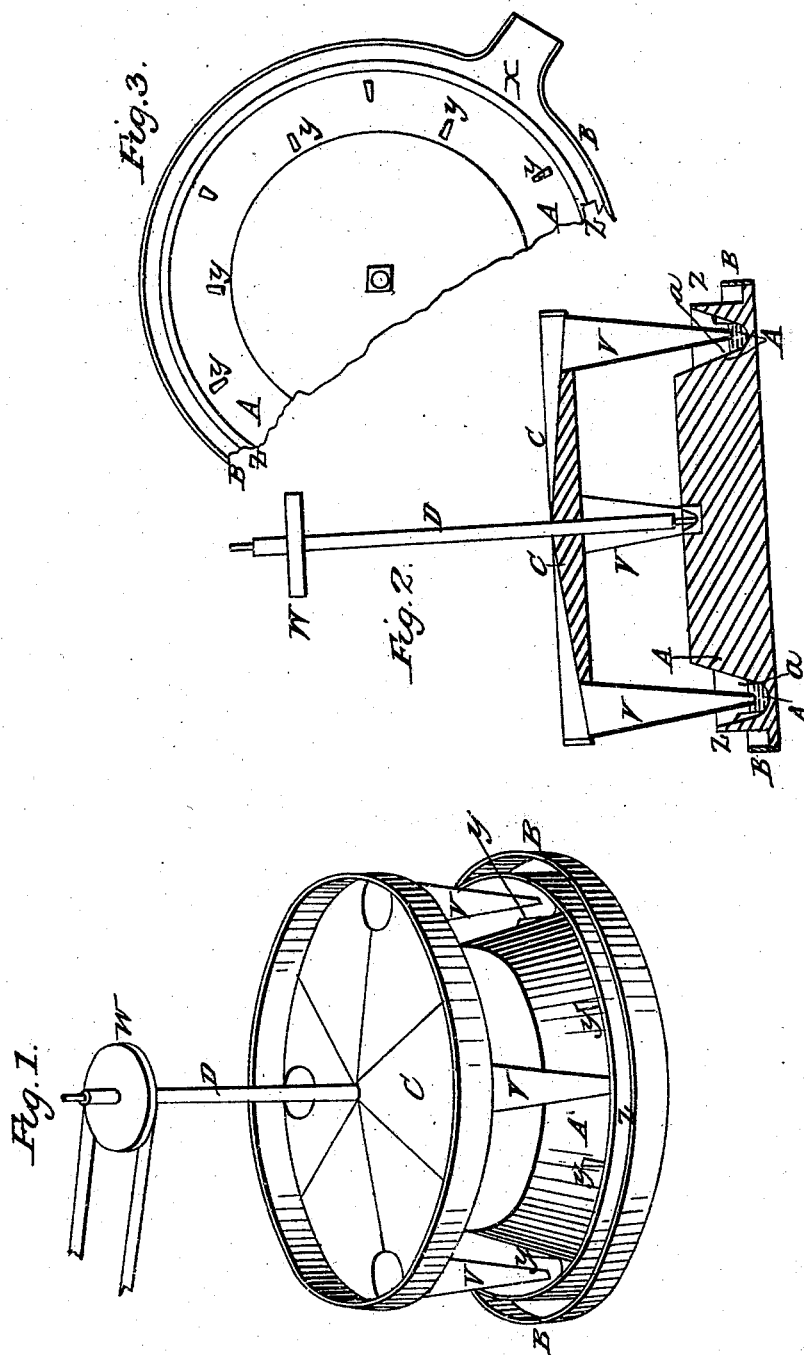


J. R. MILLER.  
Ore Amalgamator.

No. 7,478.

Patented July 2, 1850.



# UNITED STATES PATENT OFFICE.

J. R. MILLER, OF FREDERICKSBURG, VIRGINIA.

## REIMMERSING AMALGAMATOR.

Specification of Letters Patent No. 7,478, dated July 2, 1850.

*To all whom it may concern:*

Be it known that I, JOSEPH R. MILLER, of Fredericksburg, in the county of Spottsylvania and State of Virginia, have invented a new and useful Machine for Saving Gold and other Precious Metals, by Amalgamation with Mercury; and I do hereby declare that the following is a full and accurate description of the same, reference being had to the annexed drawings, making part of this specification.

Figure 1 is a perspective view of the machine as arranged for operation. Fig. 2 is a vertical section through the center of the same. Fig. 3 is a top view of a portion of the base containing the annular troughs and spout.

Similar letters in the several figures refer to corresponding parts.

I construct a horizontal circular trough marked A for containing the mercury, the outer rim Z being six or seven inches above the bottom; the inner rim being two inches higher or 9 inches above the bottom, and said trough at the top on the bevel of the rim Z being about eight inches wide and about five inches wide at the top of the concave at the dotted line forming the concave bottom; attached to the inside of both rims there may be six or more brackets Y, projecting inward toward the center of the trough, alternately on the two rims, leaving an open or annular space in the center, of two or two and half inches width; outside of the trough A is a circular gutter B, from three to five inches wide, and from three to four inches deep furnished with a spout or outlet X, Fig. 3, on one side. In the center of the circular base of the trough is a bearing for a vertical shaft D, to which is attached the basin C, the bottom of which is about twenty inches above the bottom of the circular trough; the rim three inches high; the center portion should be elevated inclining toward the rim making a regular descent from the shaft to the rim. Two or more funnel shaped tubes V are attached to the bottom, and inside the rim of the basin, they are about one foot six inches in length from the inside of the basin to their lower ends; the opening of the tubes at top should be equal to about twenty square inches area and seven eighths of one inch at the lower end placed at equal distances apart in the circle and so that their lower ends shall be suspended above the surface of the

mercury in the circular trough. The taper of the funnel shaped tubes and the distance between their lower or discharging ends and the surface of the quicksilver in the circular trough, and their motion, must be such that the gold ore and water shall be thrown with the requisite degree of force into the mercury to produce the required amalgamation. This is an important feature of my invention and one which renders it very effective for if the lower ends of the tubes are below the surface of the mercury the machine will not produce the intended effect—they must discharge the gold and water at a sufficient distance above the quicksilver in the circular trough to obtain the required force to produce the intended effect.

*Operation:* To work this amalgamator put a quantity of quicksilver into the circular trough A, equal to about one or one and an half inches deep in the center, then give to the shaft D a motion that will move the tubes fifteen or twenty inches per second in a circular direction; then let the ore or sand and water enter the revolving basin near the shaft; the ore and water as introduced are distributed equally to all the tubes by means of the revolving motion and descending bottom of the basin, the quantity of water and ore should be sufficient to fill the tubes, which will produce a pressure sufficient to agitate the quicksilver; the force of these streams and their constant movement to all parts of the trough agitates in a powerful manner the whole amount of quicksilver forcing the ore and gold into all parts, and if any particles of gold are not amalgamated by the first introduction into the quicksilver it will rise to the surface of the quicksilver—its gravity preventing it from rising farther, the stream from the next tube strikes it and forces it down again and in regular succession each tube discharges its stream upon this extensive surface of quicksilver, keeping all particles of gold that may rise to the surface of the quicksilver in agitation with the quicksilver, and by this constant agitation save all the gold.

The outer circular trough B will catch the water, sand, and gold that flow over the outer edge of the trough A, from which it will be conveyed to an auxiliary separator by the trough X, where will be collected whatever gold may escape from the trough A.

The dotted line *a* shows the height of the quicksilver in the trough A.

In amalgamating several kinds of gold ores I sometimes dispense with the use of the ledges or brackets Y.

Having thus fully described my invention and improvement in amalgamating and washing gold ore, what I claim as new and desire to secure by Letters Patent is—

10 The combination of the revolving basin and its attached tubes or spouts with the trough containing mercury, the tubes having sufficient length to force the issuing currents to the bottom of the mercury, or nearly so

and their discharging orifices being above the surface of the mercury, which latter peculiarity causes the streams as they pass and enter in succession to force below the surface any particles of metal which may not have been amalgamated by the first immersion.

In testimony whereof I have hereunto signed my name before two subscribing witnesses.

J. R. MILLER.

Witnesses:

A. E. H. JOHNSON,  
THOS. CLAIRSIN.