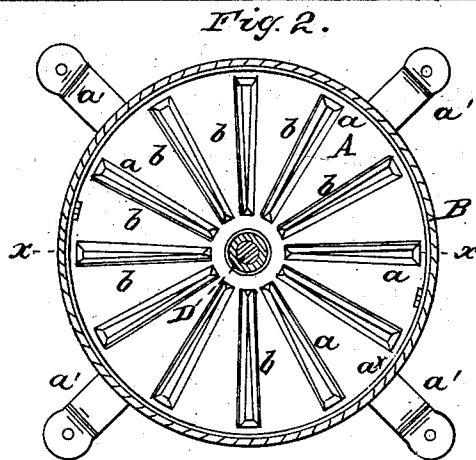
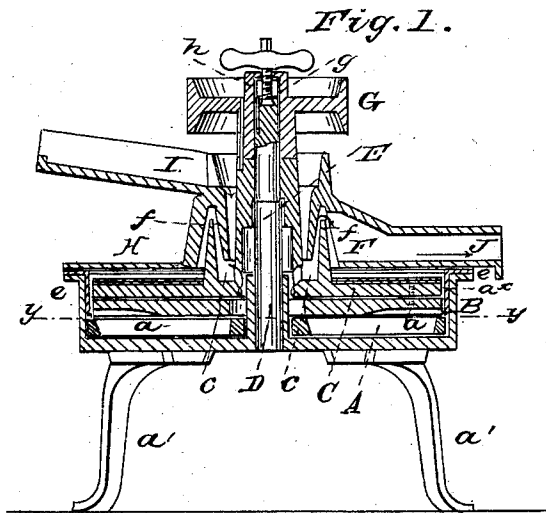


T. VARNEY.
Ore Amalgamator.

No. 35,904.

Patented July 15, 1862.



Witnesses:

J. W. Combs
Geo. R. R. R.

Inventor:

Thomas Varney
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UNITED STATES PATENT OFFICE.

THOMAS VARNEY, OF SAN FRANCISCO, CALIFORNIA.

IMPROVED AMALGAMATING-MACHINE FOR GOLD AND SILVER.

Specification forming part of Letters Patent No. 35,904, dated July 15, 1862.

To all whom it may concern:

Be it known that I, THOMAS VARNEY, of the city and county of San Francisco, in the State of California, have invented a new and Improved Machine or Device for Amalgamating Gold and Silver; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a vertical section of my invention, taken in the line *xx* of Fig. 2; Fig. 2, a horizontal section of the same, taken in the line *yy* of Fig. 1; Fig. 3, an inverted plan view of the runner; and Fig. 4, a detached transverse section of a portion of the bed, taken in the line *zz* of Fig. 2.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to obtain an amalgamating device which will insure the contact of the particles of gold or silver which the ore contains with the quicksilver, and without grinding the quicksilver, the device at the same time reducing the ore to a fine state, in order that all the gold or silver may be liberated.

The invention is designed more especially for operations in gold-bearing quartz, but is capable of being successfully used in the working of silver ore.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a stationary plate which is provided with radial recesses or grooves *a* and is fitted within a circular pan or chamber, B, that is supported at a proper height by legs *a'*. The recesses or grooves *a* have each a copper plate, *b*, fitted in it at one side, as shown clearly in Figs. 2 and 3. The plate A is of cast-iron, and is snugly fitted within the pan or chamber B.

C represents a circular cast-iron plate which is fitted in the pan or chamber B, and rests on the plate A. The plate C is fitted on a vertical arbor, D, at the center of plate A, and plate C has a tube, E, at its center, which is encompassed by a concentric flange, F. The lower part of tube E is perforated with holes *c*, which form a communication between the space formed by the flange F and the exte-

rior of tube E and the interior of said tube, as shown clearly in Fig. 1.

The face side of plate C is provided with grooves or recesses *d*, which have a tangential position relatively with the lower orifice of tube E, as shown clearly in Fig. 3, and the upper end of tube E has a driving-pulley, G, attached to it.

H is a cap which is formed of a circular plate bolted to a flange, *e*, at the upper edge of the pan or chamber B. The cap H is provided with an annular pendent flange, *f*, which fits a certain distance within the flange F of plate C, as shown clearly in Fig. 1, and the cap H is provided with a feed-trough, I, which communicates at its inner end with the space within the flange *f*, said space communicating with a discharge spout or trough, J. (Shown clearly in Fig. 1.) The plate C may be raised and lowered to regulate the degree of fineness of the pulp by means of a screw, *g*, which passes through the driving-pulley G and a nut, *h*, in said pulley.

The pulp-crushed ore, mixed with water and a requisite quantity of quicksilver, is made to flow through the machine—that is to say, pass between the plates A C under a requisite pressure—the pulp passing in and out through the holes *c* of tube E, as indicated by the arrows. The pulp is ground by this operation and the gold or silver amalgamated, the latter uniting with the quicksilver. The quicksilver, on account of its superior gravity, settles in the radial grooves or recesses *a*, and is thereby prevented from being ground or cut up by the action of plate C, while the copper plates *b*, which have an amalgamated surface, serve to retain or catch the gold particles. The flow of the pulp through the machines carries all the fine particles along, the heavier ones, on account of centrifugal force, remaining until sufficiently reduced. It will be seen that the pulp cannot be too quickly forced through the machine by centrifugal action, as the pulp is discharged at the center of the plate C.

I would remark that the pan or chamber B is lined with amalgamated copper, *a''*. The top and sides of plate C may also be similarly lined in order to prevent the escape of small particles of quicksilver.

Having thus described my invention, what

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

The two plates A C, fitted in the pan or chamber B, provided, respectively, with grooves *a d*, and used in connection with the cap H, provided with the feed and discharge spouts I J, and flange *f*, all arranged to operate with

ore pulp under pressure, substantially as and for the purpose set forth.

THOMAS VARNEY.

Witnesses:

ALFRED RIX,
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